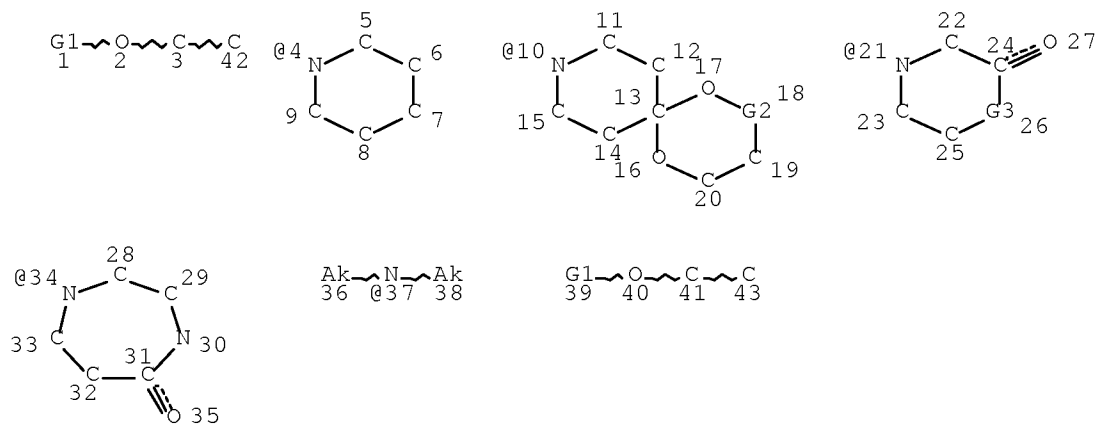


10/519,030

=> d que 167

L1 1 SEA FILE=HCAPLUS ABB=ON PLU=ON US20050215691/PN
L5 STR



VAR G1=4/10/21/34/37

REP G2=(0-1) CH2

VAR G3=O/N

NODE ATTRIBUTES:

NSPEC IS RC AT 42

NSPEC IS RC AT 43

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

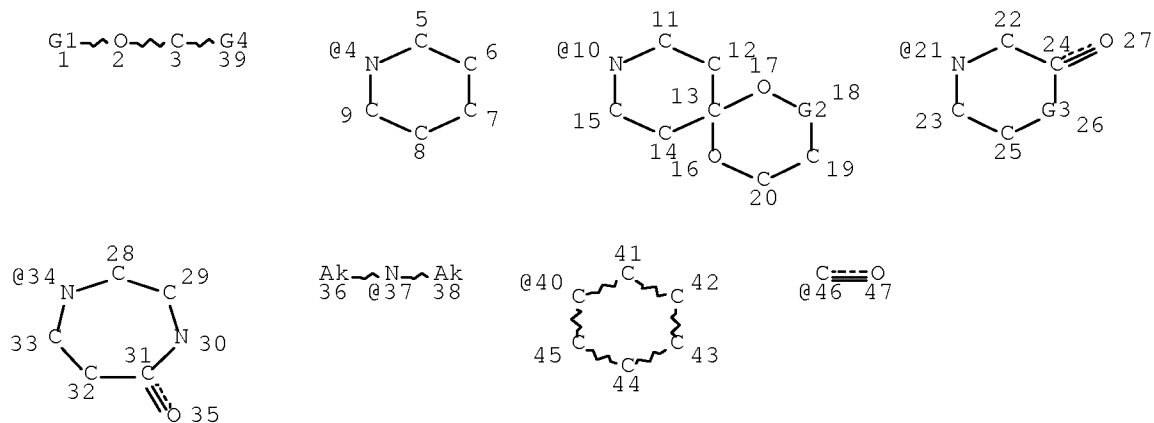
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RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 43

STEREO ATTRIBUTES: NONE

L9 STR



VAR G1=4/10/21/34/37

REP G2=(0-1) CH2

VAR G3=O/N

10/519,030

VAR G4=46/40

NODE ATTRIBUTES:

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DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

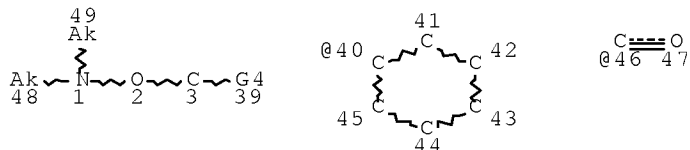
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STEREO ATTRIBUTES: NONE

L11 7221 SEA FILE=REGISTRY SSS FUL L9

L14 694 SEA FILE=REGISTRY SUB=L11 SSS FUL L5

L17 STR



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CONNECT IS E1 RC AT 48

CONNECT IS E1 RC AT 49

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

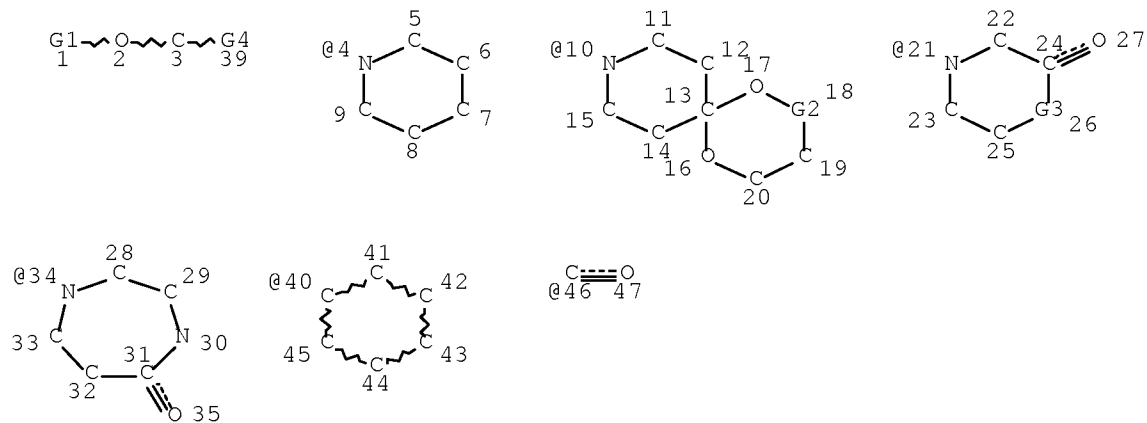
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STEREO ATTRIBUTES: NONE

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L21 STR



VAR G1=4/10/21/34

REP G2=(0-1) CH2

VAR G3=O/N

VAR G4=46/40

NODE ATTRIBUTES:

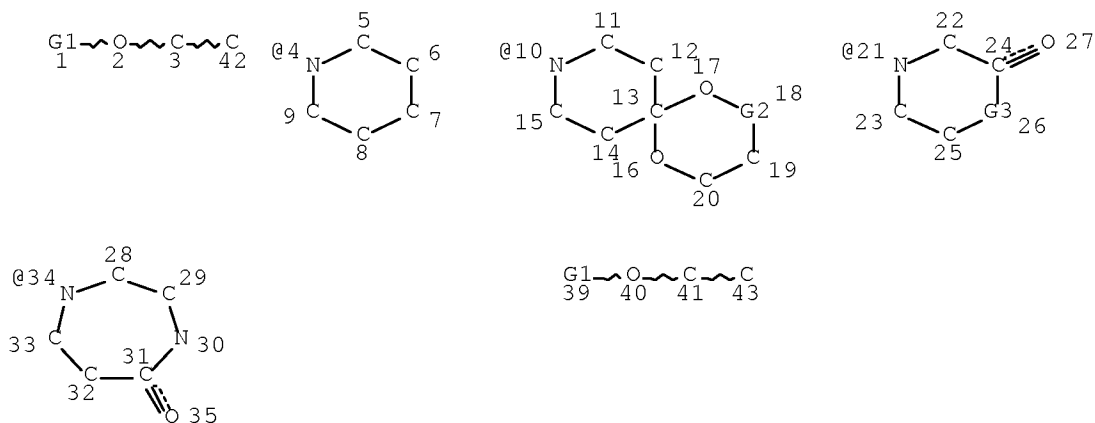
10/519,030

DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 44

STEREO ATTRIBUTES: NONE

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L25 144 SEA FILE=HCAPLUS ABB=ON PLU=ON L19
L29 209 SEA FILE=HCAPLUS ABB=ON PLU=ON L24(L)PREP/RL
L32 74 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND (PLASTIC? OR
POLYMER?)/SC, SX
L33 60 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND (INITIAT? OR
CATALYST? OR ACTIVAT?)
L34 58 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 NOT L19
L35 STR



VAR G1=4/10/21/34

REP G2=(0-1) CH2

VAR G3=O/N

NODE ATTRIBUTES:

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NSPEC IS RC AT 43

DEFAULT MLEVEL IS ATOM

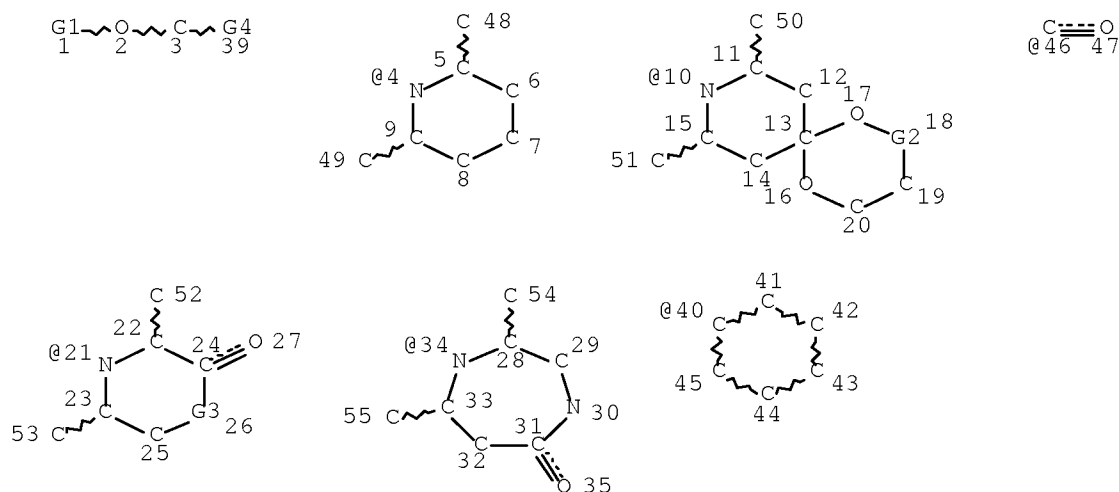
DEFAULT ECLEVEL IS LIMITED

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NUMBER OF NODES IS 40

STEREO ATTRIBUTES: NONE

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L38 96 SEA FILE=HCAPLUS ABB=ON PLU=ON L37
L39 40 SEA FILE=HCAPLUS ABB=ON PLU=ON L34 AND L38
L42 STR

10/519,030



VAR G1=4/10/21/34

REP G2=(0-1) CH2

VAR G3=O/N

VAR G4=46/40

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 52

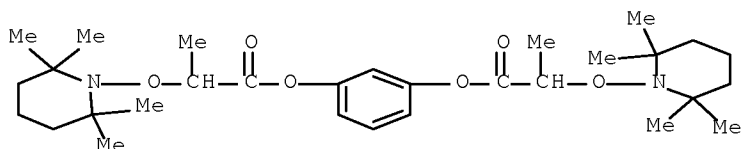
STEREO ATTRIBUTES: NONE

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L45	614	SEA FILE=HCAPLUS ABB=ON PLU=ON L44
L46	399	SEA FILE=HCAPLUS ABB=ON PLU=ON L45(L)PREP/RL
L47	271	SEA FILE=HCAPLUS ABB=ON PLU=ON L46 AND (PLASTIC? OR POLYMER?)/SC, SX
L48	208	SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND (INITIAT? OR CATALYST? OR ACTIVAT?)
L49	1	SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND L1
L50	2	SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND CLAY?
L51	4	SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND POF/RL
L52	174	SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND CAT/RL
L53	6	SEA FILE=HCAPLUS ABB=ON PLU=ON L52 AND MOA/RL
L54	15	SEA FILE=HCAPLUS ABB=ON PLU=ON L52 AND (PEP OR PYP)/RL
L55	22	SEA FILE=HCAPLUS ABB=ON PLU=ON (L49 OR L50 OR L51) OR (L53 OR L54)
L56	13	SEA FILE=HCAPLUS ABB=ON PLU=ON L25 AND L46
L57	35	SEA FILE=HCAPLUS ABB=ON PLU=ON L55 OR L56
L58	6	SEA FILE=HCAPLUS ABB=ON PLU=ON L39 AND ALKOXYAMINE INITIATOR?
L59	40	SEA FILE=HCAPLUS ABB=ON PLU=ON L39 OR L58
L60	5	SEA FILE=HCAPLUS ABB=ON PLU=ON L57 AND ALKOXYAMINE INITIATOR?
L61	35	SEA FILE=HCAPLUS ABB=ON PLU=ON L57 OR L60
L62	26	SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND ALKOXYAMINE INITIATOR?
L63	26	SEA FILE=HCAPLUS ABB=ON PLU=ON L62 AND (PLASTIC? OR

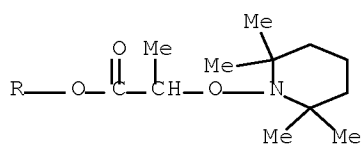
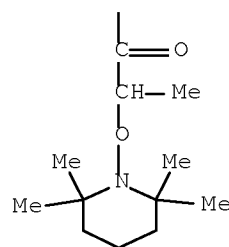
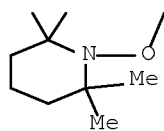
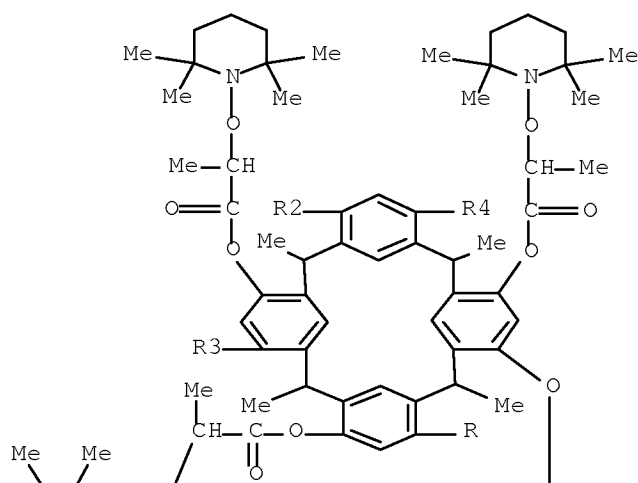
POLYMER?)/SC, SX
 L64 56 SEA FILE=HCAPLUS ABB=ON PLU=ON L61 OR L63
 L65 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L38 AND ALKOXYAMINE
 INITIATOR?
 L66 40 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 OR L65
 L67 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L64 AND L66

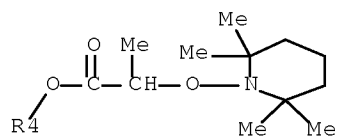
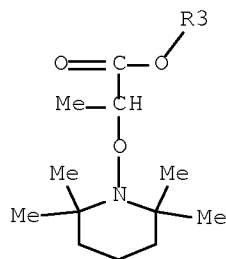
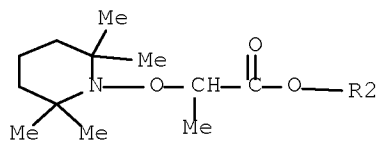
=> d 167 1-10 ibib ed abs hitstr hitind

L67 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2007:1437481 HCAPLUS Full-text
 DOCUMENT NUMBER: 148:215389
 TITLE: Synthesis of star polymers via nitroxide mediated
 free-radical polymerization: a "core-first"
 approach using resorcinarene-based
 alkoxyamine initiators
 AUTHOR(S): Abraham, Sinoj; Choi, Jae Ho; Ha, Chang-Sik; Kim,
 Il
 CORPORATE SOURCE: Department of Polymer Science and Engineering,
 Pusan National University, Pusan, 609-735, S.
 Korea
 SOURCE: Journal of Polymer Science, Part A: Polymer
 Chemistry (2007), 45(23), 5559-5572
 CODEN: JPACEC; ISSN: 0887-624X
 PUBLISHER: John Wiley & Sons, Inc.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 ED Entered STN: 19 Dec 2007
 AB The synthesis of new octa-functional alkoxyamine initiators for nitroxide-
 mediated radical polymerization (NMRP), by the derivatization of resorcinarene
 with nitroxide free radicals viz TEMPO and a freshly prepared phosphonylated
 nitroxide, is described. The efficiency of these initiators toward the
 controlled radical polymerization of styrene and tert-Bu acrylate is studied
 in detail. Linear analogs of these multifunctional initiators were also
 prepared to compare and evaluate their initiation efficiency. The favorable
 conditions for polymerization were optimized by varying the concentration of
 initiators and free nitroxides, reaction conditions, etc., to obtain well-
 defined star polymers. Star polystyrene thus obtained were further used as
 macro-initiator for the block copolymn. with tert-Bu acrylate.
 IT 1004992-66-8P 1004992-67-9P 1004992-68-0P
 1004992-69-1P
 (synthesis of octa-functional alkoxyamine
 initiators for nitroxide mediated radical polymerization of star
 polymers)
 RN 1004992-66-8 HCAPLUS
 CN INDEX NAME NOT YET ASSIGNED

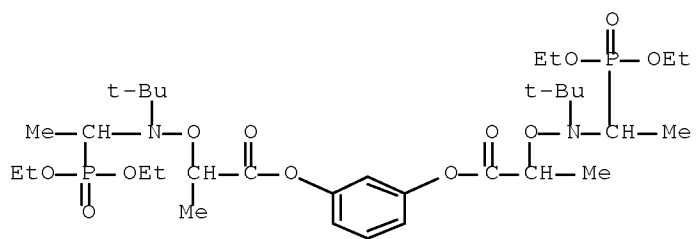


RN 1004992-67-9 HCAPLUS
 CN INDEX NAME NOT YET ASSIGNED

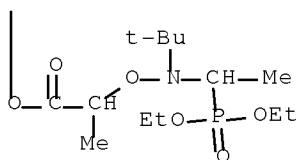
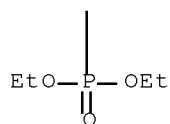
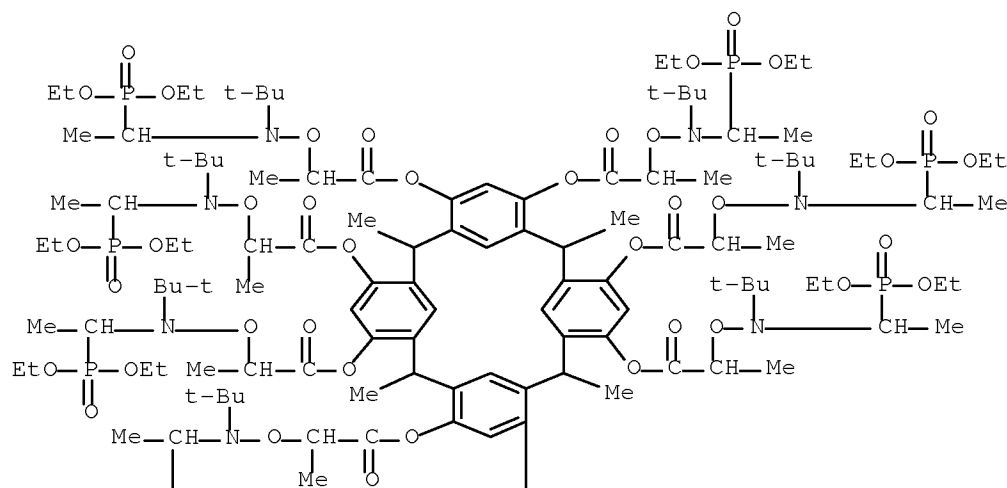




RN 1004992-68-0 HCAPLUS
 CN INDEX NAME NOT YET ASSIGNED



RN 1004992-69-1 HCAPLUS
 CN INDEX NAME NOT YET ASSIGNED



PAGE 2-A

- ```

CC 35-4 (Chemistry of Synthetic High Polymers)
IT Amines, preparation
 (alkoxylated, octa-; synthesis of octa-functional
 alkoxyamine initiators for nitroxide mediated
 radical polymerization of star polymers)
IT Polymerization
 (block, radical; synthesis of octa-armed star polymers using
 octa-functional alkoxyamine initiators)
IT Nitroxides
 (octa-; synthesis of octa-functional alkoxyamine
 initiators for nitroxide mediated radical polymerization of star
 polymers)
IT Molecular weight
 Polydispersity
 (of star polymers prepared using octa-functional alkoxyamine
 initiators before and after hydrolysis)
IT Polymerization
 (radical; synthesis of octa-armed star polymers using
 octa-functional alkoxyamine initiators)
IT Polymerization catalysts
 (radical; synthesis of octa-functional alkoxyamine
 initiators for nitroxide mediated radical polymerization of star
 polymers)
IT Polymers, preparation

```



- (star-branched, octa-armed; synthesis of octa-armed star polymers using octa-functional alkoxyamine initiators)
- IT 9003-53-6DP, Polystyrene, hydrolyzed 127972-36-5P, tert-Butyl acrylate-styrene block copolymer  
(octa-armed star-shaped; synthesis of octa-armed star polymers using octa-functional alkoxyamine initiators)
- IT 366-18-7, 2,2'-Bipyridine 7787-70-4, Cuprous bromide  
(synthesis of octa-functional alkoxyamine initiators for nitroxide mediated radical polymerization of star polymers)
- IT 1004992-66-8P 1004992-67-9P 1004992-68-0P 1004992-69-1P  
(synthesis of octa-functional alkoxyamine initiators for nitroxide mediated radical polymerization of star polymers)
- IT 75-07-0, Acetaldehyde, reactions 75-64-9, tert-Butylamine, reactions 108-46-3, Resorcinol, reactions 563-76-8, 2-Bromopropionyl bromide 598-02-7, Diethyl phosphate 2564-83-2, TEMPO 65338-98-9  
(synthesis of octa-functional alkoxyamine initiators for nitroxide mediated radical polymerization of star polymers)
- IT 96183-43-6P 122081-89-4P 1004992-64-6P 1004992-65-7P  
(synthesis of octa-functional alkoxyamine initiators for nitroxide mediated radical polymerization of star polymers)
- IT 937-14-4, m-Chloroperbenzoic acid  
(synthesis of octa-functional alkoxyamine initiators for nitroxide mediated radical polymerization of star polymers)

REFERENCE COUNT: 83 THERE ARE 83 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L67 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:1311691 HCAPLUS Full-text

DOCUMENT NUMBER: 144:52058

TITLE: Alkoxyamines containing a radically polymerizable group

INVENTOR(S): Nesvadba, Peter; Kramer, Andreas; Bugnon, Lucienne

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 54 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.    | KIND                                                                                                                                                                                                                                                                                                                                                                                                       | DATE     | APPLICATION NO. | DATE     |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|----------|
| WO 2005118651 | A1                                                                                                                                                                                                                                                                                                                                                                                                         | 20051215 | WO 2005-EP52260 | 20050517 |
| W:            | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW |          |                 |          |
| RW:           | BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,                                                                                                                                                                                                                        |          |                 |          |

10/519,030

NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,  
 GN, GQ, GW, ML, MR, NE, SN, TD, TG  
 EP 1749032 A1 20070207 EP 2005-742775 20050517  
 EP 1749032 B1 20080227  
 R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
 IE, IS, IT, LI, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR  
 CN 1957001 A 20070502 CN 2005-80016626 20050517  
 JP 2008500307 T 20080110 JP 2007-513909 20050517  
 US 2007232768 A1 20071004 US 2006-596436 20061114  
 KR 2007024655 A 20070302 KR 2006-727402 20061227  
 PRIORITY APPLN. INFO.: EP 2004-102337 A 20040527  
 WO 2005-EP52260 W 20050517

OTHER SOURCE(S): MARPAT 144:52058

ED Entered STN: 16 Dec 2005

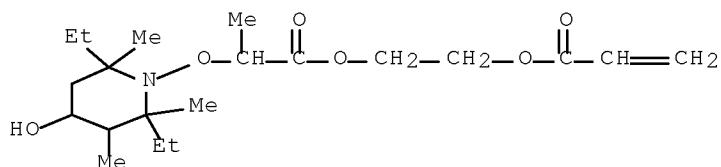
AB The instant invention relates to alkoxyamine initiators/regulators containing an ethylenically unsatd., radically polymerizable group. The compds. are useful for the preparation of complex polymeric architectures. Further aspects of the invention are a polymerizable composition and a polymerization process comprising the alkoxyamine initiators/regulators, a macroinitiator obtainable by the polymerization process and a process for polymerizing with the macroinitiator.

IT 871205-74-2P 871205-75-3P 871205-76-4P  
 871205-77-5P 871205-78-6P 871205-79-7P  
 871205-81-1P 871205-82-2P 871205-83-3P  
 871205-84-4P 871205-85-5P 871205-86-6P  
 871205-88-8P 871205-89-9P 871205-91-3P  
 871205-92-4P

(alkoxyamines containing a radically polymerizable group)

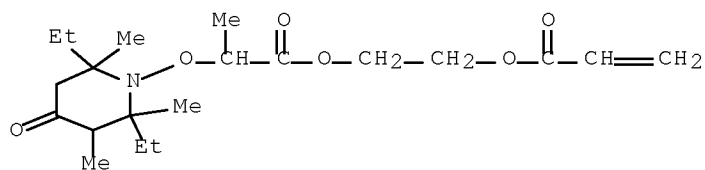
RN 871205-74-2 HCAPLUS

CN 2-Propenoic acid, 2-[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-1-oxopropoxy]ethyl ester (CA INDEX NAME)



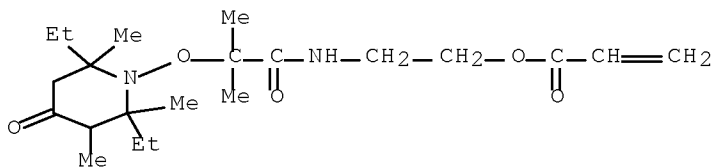
RN 871205-75-3 HCAPLUS

CN 2-Propenoic acid, 2-[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-1-oxopropoxy]ethyl ester (CA INDEX NAME)



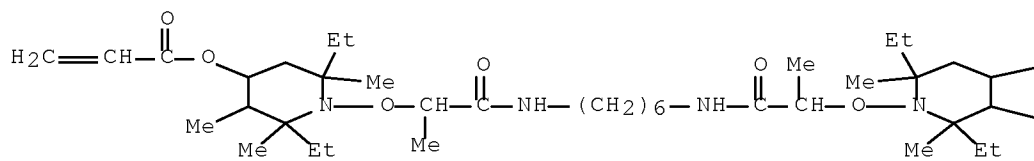
RN 871205-76-4 HCAPLUS

CN 2-Propenoic acid, 2-[[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-2-methyl-1-oxopropyl]amino]ethyl ester (CA INDEX NAME)

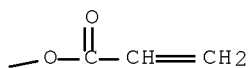


RN 871205-77-5 HCAPLUS

CN 2-Propenoic acid, 1,6-hexanediylbis[imino(1-methyl-2-oxo-2,1-ethanediyl)oxy(2,6-diethyl-2,3,6-trimethyl-1,4-piperidinediyl)] ester (9CI) (CA INDEX NAME)



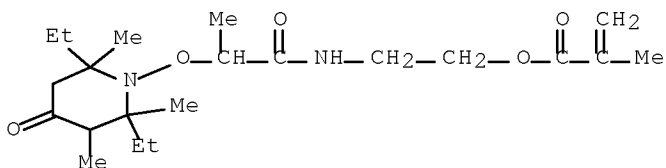
PAGE 1-A



PAGE 1-B

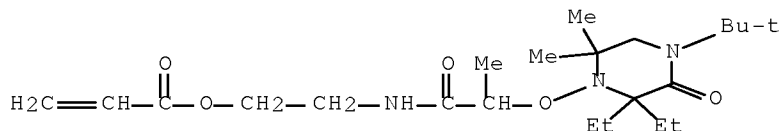
RN 871205-78-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-[[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-1-oxopropyl]amino]ethyl ester (CA INDEX NAME)



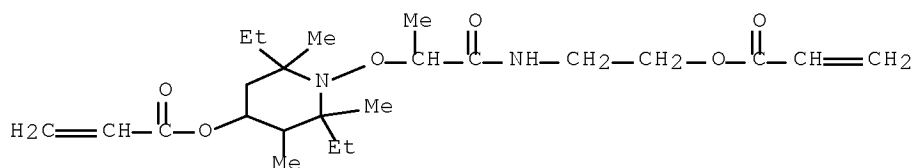
RN 871205-79-7 HCAPLUS

CN 2-Propenoic acid, 2-[[2-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]-1-oxopropyl]amino]ethyl ester (CA INDEX NAME)



RN 871205-81-1 HCAPLUS

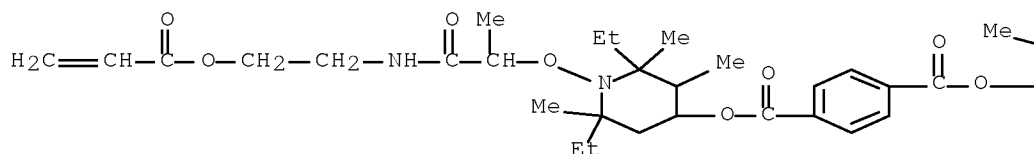
CN 2-Propenoic acid, 2,6-diethyl-2,3,6-trimethyl-1-[1-methyl-2-oxo-2-[[2-[(1-oxo-2-propenyl)oxy]ethyl]amino]ethoxy]-4-piperidiny] ester (9CI) (CA INDEX NAME)



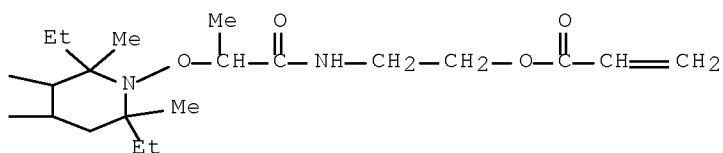
RN 871205-82-2 HCAPLUS

CN 1,4-Benzenedicarboxylic acid, bis[2,6-diethyl-2,3,6-trimethyl-1-[1-methyl-2-oxo-2-[[2-[(1-oxo-2-propenyl)oxy]ethyl]amino]ethoxy]-4-piperidiny] ester (9CI) (CA INDEX NAME)

PAGE 1-A

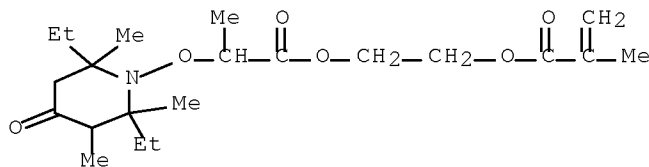


PAGE 1-B



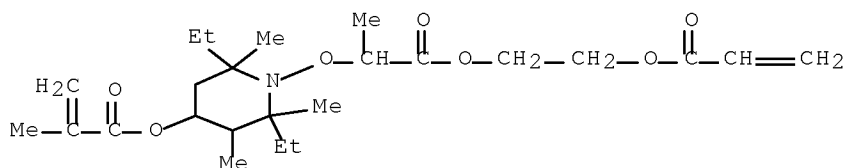
RN 871205-83-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-1-oxopropoxy]ethyl ester (CA INDEX NAME)



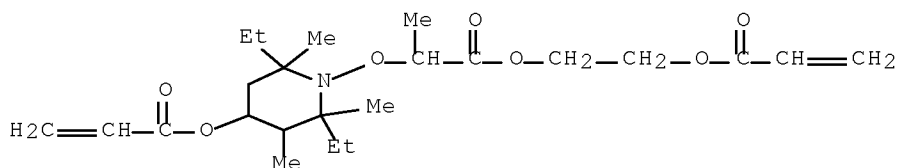
RN 871205-84-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2,6-diethyl-2,3,6-trimethyl-1-[1-methyl-2-oxo-2-[2-[(1-oxo-2-propenyl)oxy]ethoxy]ethoxy]-4-piperidinyl ester (9CI) (CA INDEX NAME)



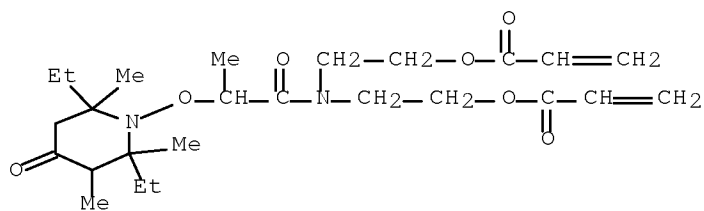
RN 871205-85-5 HCAPLUS

CN 2-Propenoic acid, 2,6-diethyl-2,3,6-trimethyl-1-[1-methyl-2-oxo-2-[2-[(1-oxo-2-propenyl)oxy]ethoxy]ethoxy]-4-piperidinyl ester (9CI) (CA INDEX NAME)



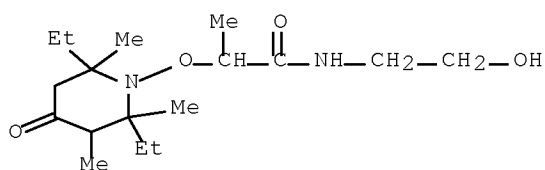
RN 871205-86-6 HCAPLUS

CN 2-Propenoic acid, [[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-1-oxopropyl]imino]di-2,1-ethanediyl ester (9CI) (CA INDEX NAME)



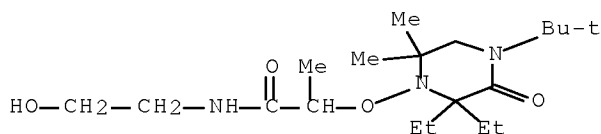
RN 871205-88-8 HCAPLUS

CN Propanamide, 2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-N-(2-hydroxyethyl)- (CA INDEX NAME)



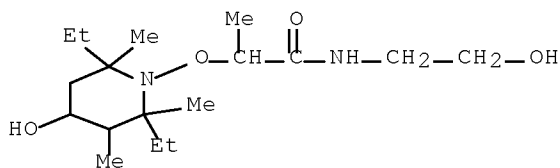
RN 871205-89-9 HCAPLUS

CN Propanamide, 2-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]-N-(2-hydroxyethyl)- (CA INDEX NAME)



RN 871205-91-3 HCAPLUS

CN Propanamide, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-N-(2-hydroxyethyl)- (CA INDEX NAME)



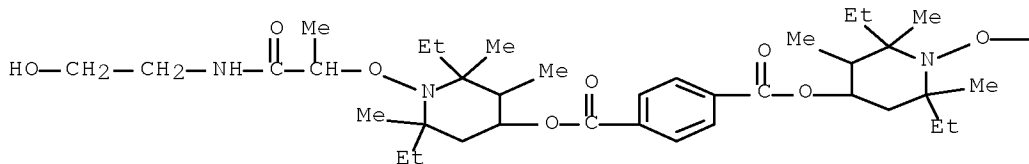
RN 871205-92-4 HCAPLUS

CN 1,4-Benzenedicarboxylic acid, bis[2,6-diethyl-1-[2-[(2-hydroxyethyl)amino]-1-methyl-2-oxoethoxy]-2,3,6-trimethyl-4-

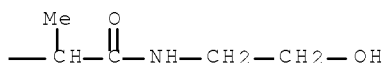
10/519,030

piperidinyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

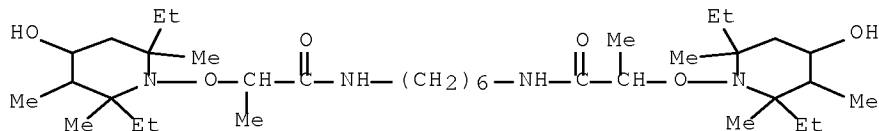


IT 485844-70-0

(alkoxyamines containing a radically polymerizable group)

RN 485844-70-0 HCAPLUS

CN Propanamide, N,N'-1,6-hexanediylbis[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]- (CA INDEX NAME)



IC ICM C08F004-00

ICS C07D211-94; C07D241-08; C07F009-40

CC 35-2 (Chemistry of Synthetic High Polymers)

IT 42275-81-0P 639809-62-4P 756490-05-8P 871205-74-2P

871205-75-3P 871205-76-4P 871205-77-5P

871205-78-6P 871205-79-7P 871205-80-0P

871205-81-1P 871205-82-2P 871205-83-3P

871205-84-4P 871205-85-5P 871205-86-6P

871205-88-8P 871205-89-9P 871205-90-2P

871205-91-3P 871205-92-4P

(alkoxyamines containing a radically polymerizable group)

IT 100-20-9, Terephthaloylchloride 141-43-5, Ethanolamine, reactions  
814-68-6, Acryloylchloride 2736-37-0, Isobutyrylbromide 3030-47-5  
17639-93-9, 2-Chloropropionic acid methylester 51210-48-1  
61746-17-6 188065-73-8 188526-94-5 264279-93-8  
485844-70-0 871205-87-7

(alkoxyamines containing a radically polymerizable group)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L67 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:616482 HCAPLUS Full-text

DOCUMENT NUMBER: 144:254433

TITLE: Practical synthesis of alkoxyamine  
initiators for living radical  
polymerization

AUTHOR(S): Moon, Bongjin; Kang, Minhyuk

CORPORATE SOURCE: Department of Chemistry, Sogang University, Seoul,  
121-742, S. Korea

SOURCE: Macromolecular Research (2005), 13(3), 229-235

CODEN: MRAECT; ISSN: 1598-5032

PUBLISHER: Polymer Society of Korea

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 18 Jul 2005

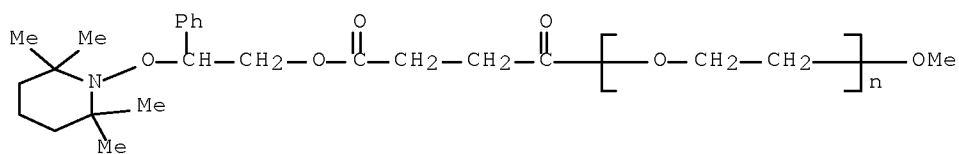
AB Various alkoxyamine initiators for nitroxide mediated radical polymerization (NMRP) were prepared in high yields by a simple substitution reaction of nitroxide anions with benzyl bromide. The required nitroxide anions were easily generated by treating either nitroxide free radicals or hydroxyamine with an alkali metal such as sodium or potassium in THF. This method is both practical and efficient, since the ionic conditions prevent other side reactions from occurring, such as the self-coupling or oligomerization reactions that are observed in the case of radical trapping conditions. To demonstrate the utility of the resulting alkoxyamine initiators, end- and telechelic-alkoxyamine PEG macroinitiators derived from the alkoxyamines were synthesized by a simple chemical modification, and used for the preparation of PEG-b-PS and PS-b-PEG-b-PS block copolymers by NMRP.

IT 877141-19-0P 877141-21-4P

(macroinitiator; synthesis of alkoxyamine  
initiators for living radical polymerization and block copolymer  
made by using them)

RN 877141-19-0 HCAPLUS

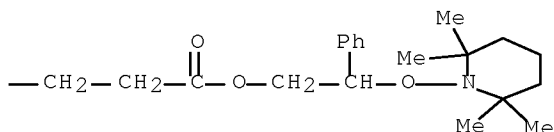
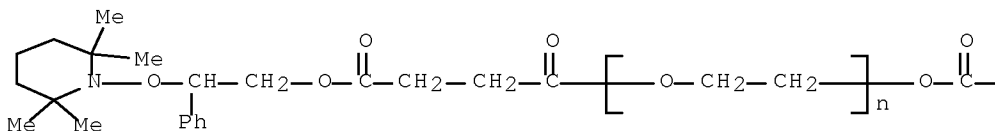
CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -[1,4-dioxo-4-[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethoxy]butyl]- $\omega$ -methoxy- (9CI)  
(CA INDEX NAME)



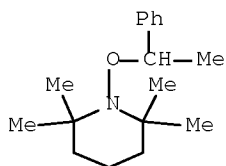
RN 877141-21-4 HCAPLUS

CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -[1,4-dioxo-4-[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethoxy]butyl]- $\omega$ -[1,4-dioxo-4-[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethoxy]butoxy]- (9CI)  
(CA INDEX NAME)

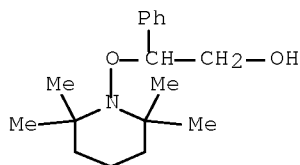




IT 154554-67-3P, 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine  
 161776-41-6P  
 (synthesis of alkoxyamine initiators for living  
 radical polymerization and block copolymer made by using them)  
 RN 154554-67-3 HCAPLUS  
 CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)

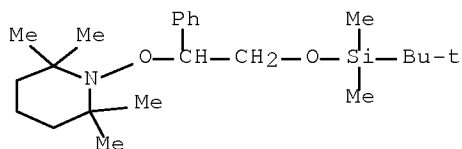


RN 161776-41-6 HCAPLUS  
 CN Benzeneethanol,  $\beta$ -[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]- (CA  
 INDEX NAME)



IT 877141-11-2P  
 (synthesis of alkoxyamine initiators for living  
 radical polymerization and block copolymer made by using them)  
 RN 877141-11-2 HCAPLUS

CN Piperidine, 1-[2-[[[(1,1-dimethylethyl)dimethylsilyl]oxy]-1-phenylethoxy]-2,2,6,6-tetramethyl- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST alkoxyamine living radical polymn initiator synthesis;  
 substitution reaction living radical polymn catalyst  
 synthesis; polyethylene glycol macroinitiator alkoxyamine block  
 copolymer manuf; nitroxide mediated radical polymn catalyst  
 synthesis  
 IT Polyoxyalkylenes, reactions  
 (synthesis of alkoxyamine initiators for living  
 radical polymerization and block copolymer made by using them)  
 IT 877141-19-0P 877141-21-4P  
 (macroinitiator; synthesis of alkoxyamine  
 initiators for living radical polymerization and block copolymer  
 made by using them)  
 IT 154554-67-3P, 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine  
 161776-41-6P 227000-59-1P 727989-07-3P  
 (synthesis of alkoxyamine initiators for living  
 radical polymerization and block copolymer made by using them)  
 IT 108-30-5, Succinic anhydride, reactions 585-71-7,  
 (1-Bromoethyl)benzene 2564-83-2, TEMPO 7440-09-7, Potassium,  
 reactions 7440-23-5, Sodium, reactions 9004-74-4, Polyethylene  
 glycol monomethyl ether 25322-68-3, Polyethylene glycol  
 41252-83-9, 2-Bromo-2-phenylethanol 61015-94-9 98194-56-0,  
 tert-Butylchlorosilane  
 (synthesis of alkoxyamine initiators for living  
 radical polymerization and block copolymer made by using them)  
 IT 31961-02-1P 37684-51-8P 245759-95-9P 877141-11-2P  
 877141-14-5P  
 (synthesis of alkoxyamine initiators for living  
 radical polymerization and block copolymer made by using them)  
 IT 697291-44-4P, Ethylene oxide-styrene diblock copolymer 697303-36-9P,  
 Ethylene oxide-styrene triblock copolymer  
 (synthesis of alkoxyamine initiators for living  
 radical polymerization and block copolymer made by using them)  
 REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L67 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:157125 HCAPLUS Full-text  
 DOCUMENT NUMBER: 142:392795  
 TITLE: Construction of a polymer skeleton that is cut in  
 half by ionizing radiation  
 AUTHOR(S): Shimizu, Takashi; Ichikawa, Tsuneki  
 CORPORATE SOURCE: Division of Molecular Chemistry, Graduate School  
 of Engineering, Hokkaido University, Sapporo,  
 060-8628, Japan  
 SOURCE: Journal of Polymer Science, Part A: Polymer

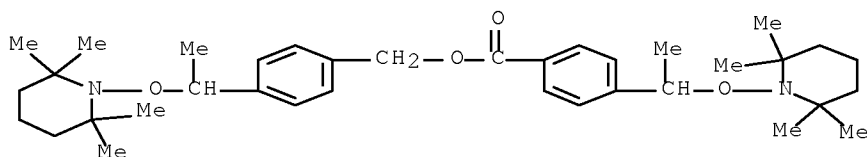
AB Polystyrene with a benzyl ester of carboxylic acid at the center of a polymer skeleton was synthesized by living radical polymerization. The initiator used had two functional groups for 2,2,6,6-tetramethylpiperidinoxyl (TEMPO)-mediated living radical polymerization on the benzyl and the carboxylic sides of the benzyl ester. Introduction of the benzyl ester changed the polystyrene from a crosslink type to a scission type polymer on  $\gamma$ -irradiation. Irradiation of the polymer resulted in a binary change of the mol. weight because of the dissociative capture of secondary electrons by the benzyl ester, as:  $\text{MnR1COOCH(C6H5)R2Mn} + e^- \rightarrow \text{MnR1COO}^- + \cdot \text{CH(C6H5)R2Mn}$ . The binary change of the mol. weight suggests that the polymer can be used as a new type of radiation resist with high sensitivity and spatial resolution to ionizing and high resistivity to plasma etching. The number of scissions per 100 eV radiation energy absorbed was 0.29, which was about one fourth of the yield of secondary electrons. The low efficiency was because of the recombination of polymer radicals generated by the dissociative electron attachment.

IT 647849-32-9P

(construction of a benzyl ester central functionalized polystyrene skeleton that is cut in half by ionizing radiation)

RN 647849-32-9 HCAPLUS

CN Benzoic acid, 4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]-, [4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]phenyl]methyl ester (CA INDEX NAME)

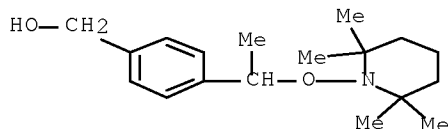


IT 209550-24-3P

(construction of a benzyl ester central functionalized polystyrene skeleton that is cut in half by ionizing radiation)

RN 209550-24-3 HCAPLUS

CN Benzenemethanol, 4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]- (CA INDEX NAME)



CC 35-8 (Chemistry of Synthetic High Polymers)

IT Polymerization

Polymerization catalysts

10/519,030

(living, radical; construction of a benzyl ester central functionalized polystyrene skeleton that is cut in half by ionizing radiation)

IT 647849-32-9P

(construction of a benzyl ester central functionalized polystyrene skeleton that is cut in half by ionizing radiation)

IT 209550-24-3P

(construction of a benzyl ester central functionalized polystyrene skeleton that is cut in half by ionizing radiation)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L67 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:2855 HCAPLUS Full-text

DOCUMENT NUMBER: 140:77932

TITLE: Cationic alkoxyamines and their use in producing nanoparticles from natural or synthetic clays

INVENTOR(S): Muehlebach, Andreas; Nesvadba, Peter; Kramer, Andreas

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 62 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.                                                                                                                                                                                                                                                                                                                                                                        | KIND | DATE     | APPLICATION NO. | DATE     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-----------------|----------|
| -----                                                                                                                                                                                                                                                                                                                                                                             | ---- | -----    | -----           | -----    |
| WO 2004000809                                                                                                                                                                                                                                                                                                                                                                     | A1   | 20031231 | WO 2003-EP6370  | 20030617 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW |      |          |                 |          |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG                                                                                                                |      |          |                 |          |
| CA 2486958                                                                                                                                                                                                                                                                                                                                                                        | A1   | 20031231 | CA 2003-2486958 | 20030617 |
| AU 2003279373                                                                                                                                                                                                                                                                                                                                                                     | A1   | 20040106 | AU 2003-279373  | 20030617 |
| EP 1515950                                                                                                                                                                                                                                                                                                                                                                        | A1   | 20050323 | EP 2003-740262  | 20030617 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK                                                                                                                                                                                                                                                     |      |          |                 |          |
| CN 1662499                                                                                                                                                                                                                                                                                                                                                                        | A    | 20050831 | CN 2003-814665  | 20030617 |
| JP 2005538964                                                                                                                                                                                                                                                                                                                                                                     | T    | 20051222 | JP 2004-514745  | 20030617 |
| MX 2004PA12885                                                                                                                                                                                                                                                                                                                                                                    | A    | 20050331 | MX 2004-PA12885 | 20041217 |
| US 2005215691                                                                                                                                                                                                                                                                                                                                                                     | A1   | 20050929 | US 2004-519030  | 20041222 |

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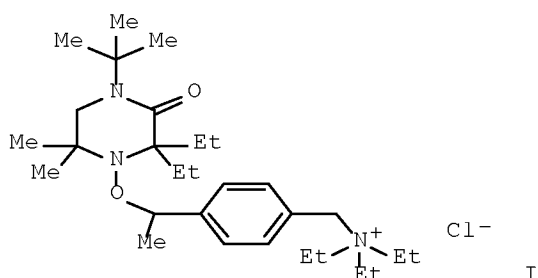
PRIORITY APPLN. INFO.: EP 2002-405520 A 20020624

WO 2003-EP6370 W 20030617

OTHER SOURCE(S): MARPAT 140:77932

ED Entered STN: 02 Jan 2004

GI



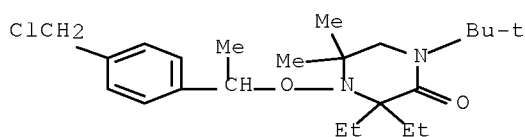
AB The instant invention relates to cationic alkoxyamines such as I, which are useful as polymerization initiators/regulators in a controlled stable free radical polymerization of unsatd. compds. in the presence of nanoparticles of natural or synthetic clays to produce intercalated and/or exfoliated nanoparticles. The invention also relates to improved nanocomposites produced by this process and to the use of these nanocomposite compns. as, for example, coatings, sealants, caulks, adhesives and as plastic additives.

IT 639809-49-7P, 1-tert-Butyl-4-[1-[4-(chloromethyl)phenyl]ethoxy]-3,3-diethyl-5,5-dimethylpiperazin-2-one  
 639809-51-1P, 1-tert-Butyl-3,3-diethyl-5,5-dimethyl-4-[1-[4-(4-methylpiperazin-1-ylcarbonyl)phenyl]ethoxy]piperazin-2-one  
 639809-54-4P, 2-(2,6-Diethyl-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-dimethylaminopropyl)propionamide 639809-56-6P,  
 2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-dimethylaminopropyl)propionamide 639809-60-2P,  
 2,6-Diethyl-1-(1-phenylethoxy)-2,3,6-trimethylpiperidin-4-one  
 O-(3-dimethylaminopropyl) oxime 639809-63-5P,  
 Bis[2,6-diethyl-1-[1-(3-dimethylaminopropylcarbonyl)ethoxy]-2,3,6-trimethylpiperidin-4-yl] terephthalate 639809-65-7P,  
 N-(3-Dimethylaminopropyl)-2-(4-hydroxy-2,2,6,6-tetramethylpiperidin-1-yloxy)propionamide 639809-67-9P, 2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-dimethylaminopropyl)-2-methylpropionamide 639809-73-7P

(catalyst precursor; cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

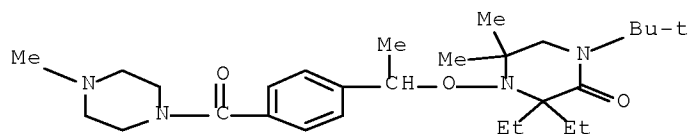
RN 639809-49-7 HCAPLUS

CN Piperazinone, 4-[1-[4-(chloromethyl)phenyl]ethoxy]-1-(1,1-dimethylethyl)-3,3-diethyl-5,5-dimethyl- (9CI) (CA INDEX NAME)



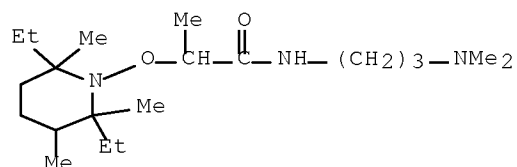
RN 639809-51-1 HCAPLUS

CN Piperazine, 1-[4-[1-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]ethyl]benzoyl]-4-methyl- (9CI) (CA INDEX NAME)



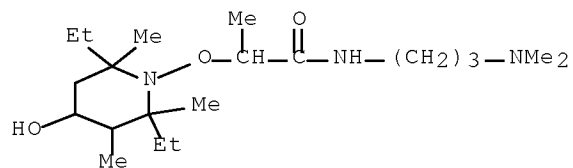
RN 639809-54-4 HCAPLUS

CN Propanamide, 2-[(2,6-diethyl-2,3,6-trimethyl-1-piperidinyl)oxy]-N-[3-(dimethylamino)propyl]- (CA INDEX NAME)



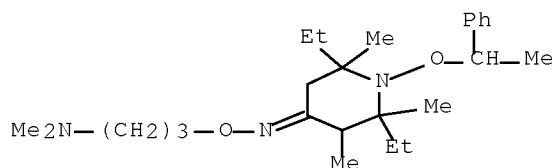
RN 639809-56-6 HCAPLUS

CN Propanamide, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-N-[3-(dimethylamino)propyl]- (CA INDEX NAME)



RN 639809-60-2 HCAPLUS

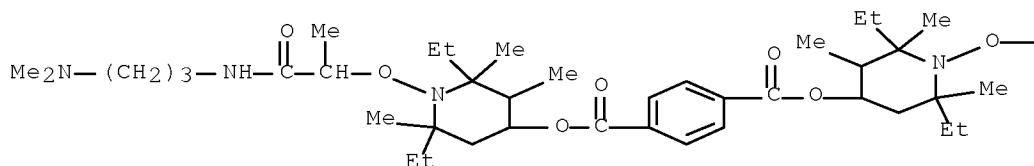
CN 4-Piperidinone, 2,6-diethyl-2,3,6-trimethyl-1-(1-phenylethoxy)-, O-[3-(dimethylamino)propyl]oxime (CA INDEX NAME)



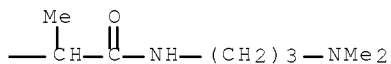
RN 639809-63-5 HCAPLUS

CN 1,4-Benzenedicarboxylic acid, bis[1-[2-[[3-(dimethylamino)propyl]amino]-1-methyl-2-oxoethoxy]-2,6-diethyl-2,3,6-trimethyl-4-piperidiny] ester (9CI) (CA INDEX NAME)

PAGE 1-A

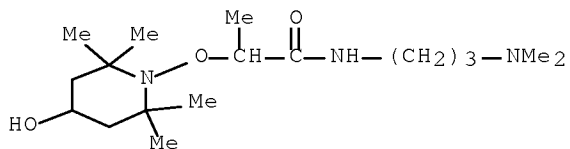


PAGE 1-B



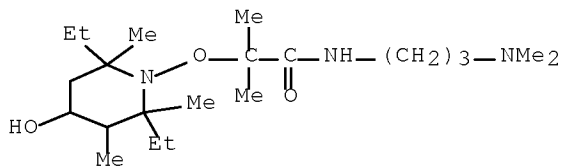
RN 639809-65-7 HCAPLUS

CN Propanamide, N-[3-(dimethylamino)propyl]-2-[(4-hydroxy-2,2,6,6-tetramethyl-1-piperidinyloxy)- (CA INDEX NAME)



RN 639809-67-9 HCAPLUS

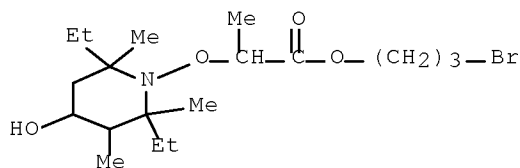
CN Propanamide, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyloxy)-N-[3-(dimethylamino)propyl]-2-methyl- (CA INDEX NAME)



RN 639809-73-7 HCAPLUS

10/519,030

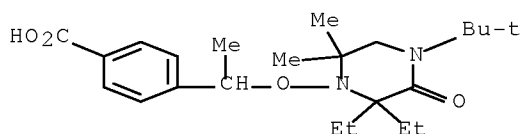
CN Propanoic acid, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-, 3-bromopropyl ester (CA INDEX NAME)



IT 319458-08-7, 4-[1-(4-tert-Butyl-2,2-diethyl-6,6-dimethyl-3-oxopiperazin-1-yloxy)ethyl]benzoic acid 478697-26-6  
(catalyst precursor; cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

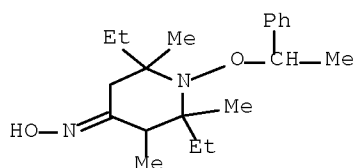
RN 319458-08-7 HCAPLUS

CN Benzoic acid, 4-[1-[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]ethyl]- (CA INDEX NAME)



RN 478697-26-6 HCAPLUS

CN 4-Piperidinone, 2,6-diethyl-2,3,6-trimethyl-1-(1-phenylethoxy)-, oxime (CA INDEX NAME)



IT 639809-48-6P, [4-[1-(4-tert-Butyl-2,2-diethyl-6,6-dimethyl-3-oxopiperazin-1-yloxy)ethyl]benzyl]triethylammonium chloride  
639809-50-0P, 4-[4-[1-(4-tert-Butyl-2,2-diethyl-6,6-dimethyl-3-oxopiperazin-1-yloxy)ethyl]benzoyl]-1,1-dimethylpiperazin-1-ium iodide  
639809-52-2P, [3-[2-(2,6-Diethyl-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylethylammonium bromide  
639809-55-5P, [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylethylammonium bromide  
639809-59-9P, [3-[2,6-Diethyl-1-(1-phenylethoxy)-2,3,6-trimethylpiperidin-4-ylideneaminoxy]propyl]dimethylethylammoniu

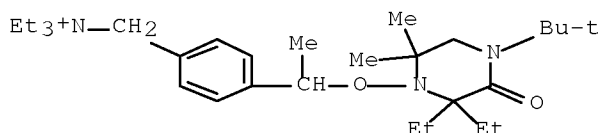


m bromide 639809-61-3P, Bis[[3-[2-(2,6-diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylethylammonium bromide] terephthalate 639809-64-6P, Ethyl[3-[2-(4-hydroxy-2,2,6,6-tetramethylpiperidin-1-yloxy)propionylamino]propyl]dimethylammonium bromide 639809-66-8P, [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-2-methylpropionylamino]propyl]dimethylethylammonium bromide 639809-69-1P, Benzyl[3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-2-methylpropionylamino]propyl]dimethylammonium chloride 639809-70-4P, Benzyl[3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylammonium chloride 639809-71-5P, [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]tributylphosphonium bromide

(cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

RN 639809-48-6 HCAPLUS

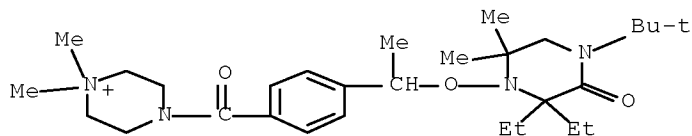
CN Benzenemethanaminium, 4-[1-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]ethyl]-N,N,N-triethyl-, chloride (9CI) (CA INDEX NAME)



● Cl<sup>-</sup>

RN 639809-50-0 HCAPLUS

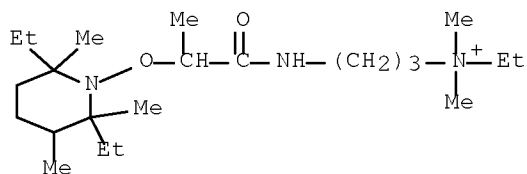
CN Piperazinium, 4-[4-[1-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]ethyl]benzoyl]-1,1-dimethyl-, iodide (9CI) (CA INDEX NAME)



● I<sup>-</sup>

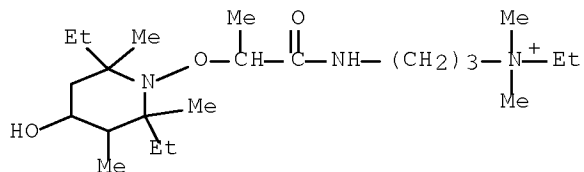
RN 639809-52-2 HCAPLUS

CN 1-Propanaminium, 3-[[2-[(2,6-diethyl-2,3,6-trimethyl-1-piperidinyl)oxy]-1-oxopropyl]amino]-N-ethyl-N,N-dimethyl-, bromide (9CI) (CA INDEX NAME)



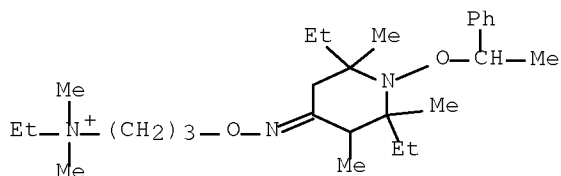
RN 639809-55-5 HCAPLUS

CN 1-Propanaminium, 3-[[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-1-oxopropyl]amino]-N-ethyl-N,N-dimethyl-, bromide (9CI) (CA INDEX NAME)



RN 639809-59-9 HCAPLUS

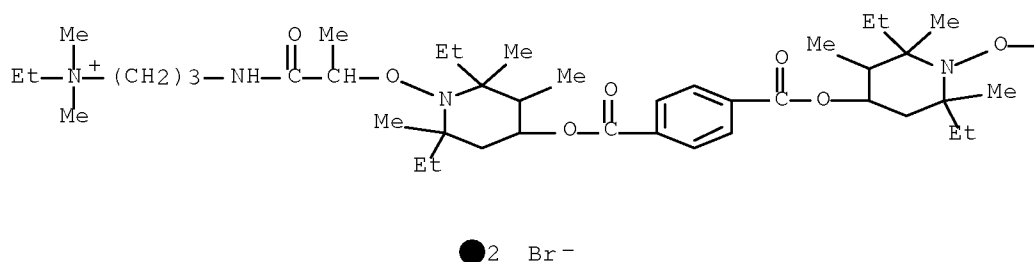
CN 1-Propanaminium, 3-[[[2,6-diethyl-2,3,6-trimethyl-1-(1-phenylethoxy)-4-piperidinylidene]amino]oxy]-N-ethyl-N,N-dimethyl-, bromide (9CI) (CA INDEX NAME)



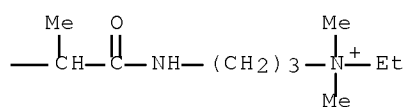
RN 639809-61-3 HCAPLUS

CN 1-Propanaminium, 3,3'-[[1,4-phenylenebis[carbonyloxy(2,6-diethyl-2,3,6-trimethyl-4,1-piperidinediyl)oxy(2-methyl-1-oxo-2,1-ethanediyl)imino]]bis[N-ethyl-N,N-dimethyl-], dibromide (9CI) (CA INDEX NAME)

PAGE 1-A

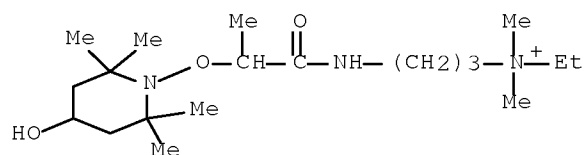


PAGE 1-B



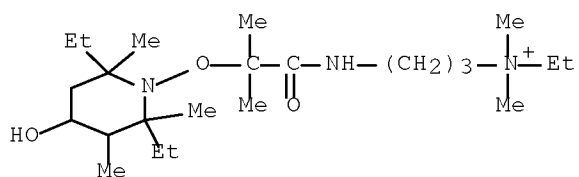
RN 639809-64-6 HCAPLUS

CN 1-Propanaminium, N-ethyl-3-[[2-[(4-hydroxy-2,2,6,6-tetramethyl-1-piperidinyl)oxy]-1-oxopropyl]amino]-N,N-dimethyl-, bromide (9CI) (CA INDEX NAME)



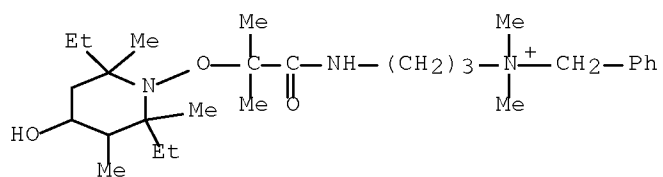
RN 639809-66-8 HCAPLUS

CN 1-Propanaminium, 3-[[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-2-methyl-1-oxopropyl]amino]-N-ethyl-N,N-dimethyl-, bromide (9CI) (CA INDEX NAME)



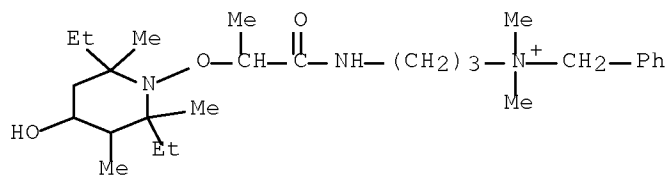
RN 639809-69-1 HCAPLUS

CN Benzenemethanaminium, N-[3-[[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-2-methyl-1-oxopropyl]amino]propyl]-N,N-dimethyl-, chloride (9CI) (CA INDEX NAME)



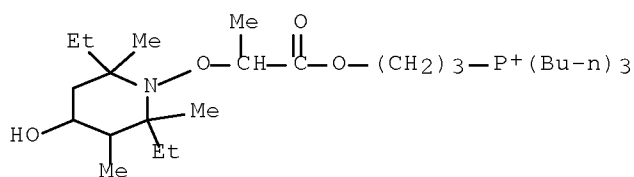
RN 639809-70-4 HCAPLUS

CN Benzenemethanaminium, N-[3-[[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-1-oxopropyl]amino]propyl]-N,N-dimethyl-, chloride (9CI) (CA INDEX NAME)



RN 639809-71-5 HCAPLUS

CN Phosphonium, tributyl[3-[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-1-oxopropoxy]propyl]-, bromide (9CI) (CA INDEX NAME)



- IC ICM C07D211-94  
ICS C07D241-08; C07F009-38; C08F002-00
- CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 23, 27, 28, 38, 42
- ST cationic alkoxyamine initiator unsatd compd polymn  
nanocomposite manuf; plastic additive nanocomposite cationic  
alkoxyamine polymn initiator; caulking nanocomposite  
cationic alkoxyamine polymn initiator; adhesive  
nanocomposite cationic alkoxyamine polymn initiator;  
tertiary butyldiethyloxopiperazinyloxyethyl benzyltriethylammonium  
chloride initiator polymn nanocomposite manuf; sealant  
nanocomposite cationic alkoxyamine polymn initiator; coating  
nanocomposite cationic alkoxyamine polymn initiator
- IT Phosphonium compounds  
Quaternary ammonium compounds, preparation  
(alkoxyamino; cationic alkoxyamines for catalysts  
/regulators for polymerization of unsatd. compds. in presence of  
nanoparticles from natural or synthetic clays for manufacture  
of nanocomposites)
- IT Disperse systems  
(cationic alkoxyamines for catalysts/regulators for  
polymerization of unsatd. compds. in presence of nanoparticles from  
natural or synthetic clays for manufacture of nanocomposite  
dispersions)
- IT Nanocomposites  
Polymerization catalysts  
(cationic alkoxyamines for catalysts/regulators for  
polymerization of unsatd. compds. in presence of nanoparticles from  
natural or synthetic clays for manufacture of nanocomposites)
- IT Phyllosilicate minerals  
Smectite-group minerals  
(cationic alkoxyamines for catalysts/regulators for  
polymerization of unsatd. compds. in presence of nanoparticles from  
natural or synthetic clays for manufacture of nanocomposites)
- IT Adhesives  
(cationic alkoxyamines for catalysts/regulators for  
polymerization of unsatd. compds. in presence of nanoparticles from  
natural or synthetic clays for manufacture of nanocomposites  
for adhesive additives)
- IT Coating materials  
(cationic alkoxyamines for catalysts/regulators for  
polymerization of unsatd. compds. in presence of nanoparticles from  
natural or synthetic clays for manufacture of nanocomposites  
for coating additives)
- IT Inks  
(cationic alkoxyamines for catalysts/regulators for

polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites for ink additives)

IT Paints

(cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites for paint additives)

IT Clay minerals

(intercalated, cationic alkoxyamine-; cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

IT Plastics, miscellaneous

(thermoplastics; cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites for thermoplastics)

IT 188526-94-5P 639809-49-7P, 1-tert-Butyl-4-[1-[4-(chloromethyl)phenyl]ethoxy]-3,3-diethyl-5,5-dimethylpiperazin-2-one 639809-51-1P, 1-tert-Butyl-3,3-diethyl-5,5-dimethyl-4-[1-[4-(4-methylpiperazin-1-ylcarbonyl)phenyl]ethoxy]piperazin-2-one 639809-53-3P, 2-Chloro-N-(3-dimethylaminopropyl)propionamide 639809-54-4P, 2-(2,6-Diethyl-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-dimethylaminopropyl)propionamide 639809-56-6P, 2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-dimethylaminopropyl)propionamide 639809-58-8P, Diethyl [1-[tert-butyl-[1-(3-dimethylaminopropylcarbonyl)ethoxy]amino]-2,2-dimethylpropyl]phosphonate 639809-60-2P, 2,6-Diethyl-1-(1-phenylethoxy)-2,3,6-trimethylpiperidin-4-one O-(3-dimethylaminopropyl) oxime 639809-63-5P, Bis[2,6-diethyl-1-[1-(3-dimethylaminopropylcarbonyl)ethoxy]-2,3,6-trimethylpiperidin-4-yl] terephthalate 639809-65-7P, N-(3-Dimethylaminopropyl)-2-(4-hydroxy-2,2,6,6-tetramethylpiperidin-1-yloxy)propionamide 639809-67-9P, 2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-N-(3-dimethylaminopropyl)-2-methylpropionamide 639809-68-0P, 2-Bromo-N-(3-dimethylaminopropyl)-2-methylpropionamide 639809-72-6P, 3-Bromopropyl 2-bromopropionate 639809-73-7P

(catalyst precursor; cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

IT 74-88-4, Methyl iodide, reactions 74-96-4, Ethyl bromide 100-44-7, Benzyl chloride, reactions 109-01-3, N-Methylpiperazine 109-54-6, 3-Dimethylaminopropyl chloride 109-55-7, 3-Dimethylamino-1-propylamine 121-44-8, Triethylamine, reactions 627-18-9 998-40-3, Tributylphosphine 1592-20-7, 4-Chloromethylstyrene 2226-96-2, 4-Hydroxy-TEMPO 17639-93-9, Methyl 2-chloropropionate 20769-85-1, 2-Bromo-2-methylpropionyl bromide 61745-37-7, 2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidine 1-N-oxyl 61746-17-6, 2,6-Diethyl-2,3,6-trimethylpiperidine 1-N-oxyl 264279-93-8, 1-tert-Butyl-3,3-diethyl-5,5-dimethylpiperazin-2-one 4-N-oxyl 319458-08-7, 4-[1-(4-tert-Butyl-2,2-diethyl-6,6-dimethyl-3-oxopiperazin-1-yloxy)ethyl]benzoic acid 478697-26-6 639809-62-4

(catalyst precursor; cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

IT 639809-48-6P, [4-[1-(4-tert-Butyl-2,2-diethyl-6,6-dimethyl-3-oxopiperazin-1-yloxy)ethyl]benzyl]triethylammonium chloride  
 639809-50-0P, 4-[4-[1-(4-tert-Butyl-2,2-diethyl-6,6-dimethyl-3-oxopiperazin-1-yloxy)ethyl]benzoyl]-1,1-dimethylpiperazin-1-ium iodide  
 639809-52-2P, [3-[2-(2,6-Diethyl-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylethylammonium bromide  
 639809-55-5P, [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylethylammonium bromide  
 639809-57-7P 639809-59-9P, [3-[2,6-Diethyl-1-(1-phenylethoxy)-2,3,6-trimethylpiperidin-4-ylideneaminoxy]propyl]dimethylethylammonium bromide  
 639809-61-3P, Bis[[3-[2-(2,6-diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylethylammonium bromide] terephthalate  
 639809-64-6P, Ethyl[3-[2-(4-hydroxy-2,2,6,6-tetramethylpiperidin-1-yloxy)propionylamino]propyl]dimethylammonium bromide  
 639809-66-8P, [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-2-methylpropionylamino]propyl]dimethylethylammonium bromide  
 639809-69-1P, Benzyl[3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)-2-methylpropionylamino]propyl]dimethylammonium chloride  
 639809-70-4P, Benzyl[3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionylamino]propyl]dimethylammonium chloride  
 639809-71-5P, [3-[2-(2,6-Diethyl-4-hydroxy-2,3,6-trimethylpiperidin-1-yloxy)propionyloxy]propyl]tributylphosphonium bromide

(cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

IT 9003-49-0P, Poly(butyl acrylate) 9003-53-6P, Polystyrene  
 (cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

IT 1318-00-9, Vermiculite 1318-74-7, Kaolinite, uses 1318-93-0D, Montmorillonite, derivs. 1319-41-1, Saponite 12172-85-9, Beidellite 12173-47-6, Optigel SH 12174-06-0, Nontronite (Fe<sub>2</sub>(Si<sub>3.67</sub>Al<sub>0.33</sub>)Na<sub>0.33</sub>(OH)2010.xH<sub>2</sub>O) 12244-16-5, Endellite 12417-86-6, Stevensite 565450-32-0, Nanofil EXM588  
 (cationic alkoxyamines for catalysts/regulators for polymerization of unsatd. compds. in presence of nanoparticles from natural or synthetic clays for manufacture of nanocomposites)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L67 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:583946 HCAPLUS Full-text

DOCUMENT NUMBER: 139:246241

TITLE: An improved catalytic method for alkoxyamine synthesis - functionalized and biradical initiators for nitroxide-mediated radical polymerization

AUTHOR(S): Bothe, Marc; Schmidt-Naake, Gudrun

CORPORATE SOURCE: Institut fuer Technische Chemie, Technische Universitaet Clausthal, Clausthal-Zellerfeld, 38678, Germany

SOURCE: Macromolecular Rapid Communications (2003), 24(10), 609-613

CODEN: MRCOE3; ISSN: 1022-1336

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 30 Jul 2003

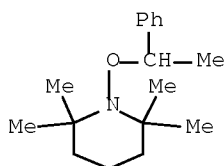
AB Mn(salen)Cl [(N,N'-disalicylidene-1,2-ethanediamino)manganese chloride] was applied as a low-cost catalyst for the formation of alkoxyamines from nitroxides and substituted styrenes. These "unimol. initiators" for nitroxide-mediated radical polymerization (NMRP) were synthesized using 2,2,6,6-tetramethyl-1-piperidine-1-oxyl and 2,2,5-trimethyl-4-phenyl-3-azahexane-3-oxyl. Functionalized alkoxyamines were obtained from 4-vinylbenzyl chloride and 4-vinylbenzyl alc. The divinyl compound 1,2-bis(4-vinylphenyl)ethane was converted to an alkoxyamine monomer and to bisaminooxy compds., which can be used as "biradical initiators" for NMRP.

IT 154554-67-3P 212132-38-2P 596135-22-7P  
596135-24-9P

(improved catalytic method for synthesis of alkoxyamine  
functionalized and biradical initiators for  
nitroxide-mediated radical polymerization)

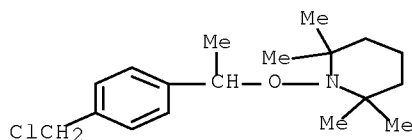
RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



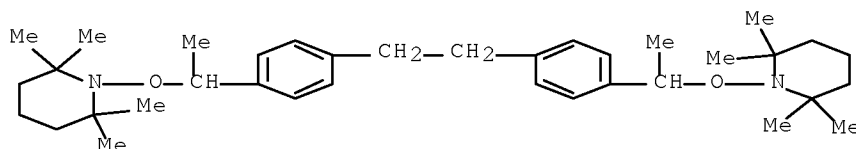
RN 212132-38-2 HCAPLUS

CN Piperidine, 1-[1-[4-(chloromethyl)phenyl]ethoxy]-2,2,6,6-tetramethyl-  
(CA INDEX NAME)



RN 596135-22-7 HCAPLUS

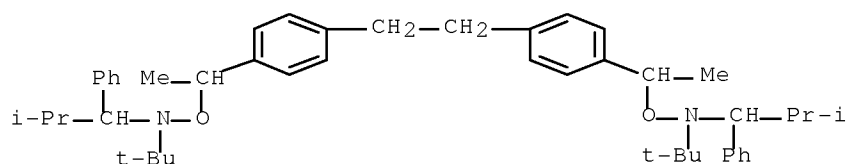
CN Piperidine, 1,1'-[1,2-ethanediylbis(4,1-phenyleneethylenedioxy)]bis[2,  
2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



RN 596135-24-9 HCAPLUS



CN Benzenemethanamine, N,N'-[1,2-ethanediylbis(4,1-phenyleneethylideneoxy)]bis[N-(1,1-dimethylethyl)- $\alpha$ -(1-methylethyl)- (9CI) (CA INDEX NAME)

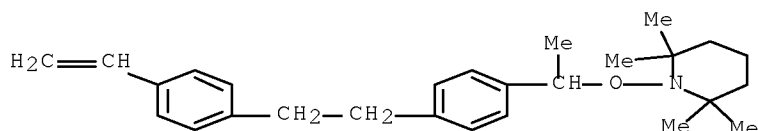


IT 596135-23-8P

(monomer; improved catalytic method for synthesis of alkoxyamine functionalized and biradical initiators for nitroxide-mediated radical polymerization)

RN 596135-23-8 HCAPLUS

CN Piperidine, 1-[1-[4-[2-(4-ethenylphenyl)ethyl]phenyl]ethoxy]-2,2,6,6-tetramethyl- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

ST alkoxyamine initiator nitroxide radical polymn

IT Catalysts

(for synthesis of alkoxyamine functionalized and biradical initiators for nitroxide-mediated radical polymerization)

IT Polymerization catalysts

(radical; improved catalytic method for synthesis of alkoxyamine functionalized and biradical initiators for nitroxide-mediated radical polymerization)

IT 53177-12-1P

(catalyst; improved catalytic method for synthesis of alkoxyamine functionalized and biradical initiators for nitroxide-mediated radical polymerization)

IT 154554-67-3P 212132-38-2P 227000-59-1P

227000-85-3P 433266-98-9P 596135-22-7P

596135-24-9P

(improved catalytic method for synthesis of alkoxyamine functionalized and biradical initiators for nitroxide-mediated radical polymerization)

IT 1074-61-9P, 4-Vinylbenzyl alcohol 2628-16-2P, 4-Vinylphenyl acetate

48174-52-3P, 1,2-Bis(4-vinylphenyl)ethane

(intermediate; improved catalytic method for synthesis of alkoxyamine functionalized and biradical initiators for nitroxide-mediated radical polymerization)

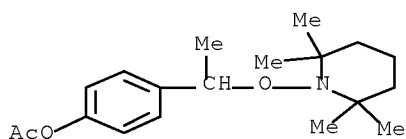
IT 596135-23-8P

(monomer; improved catalytic method for synthesis of alkoxyamine

10/519,030

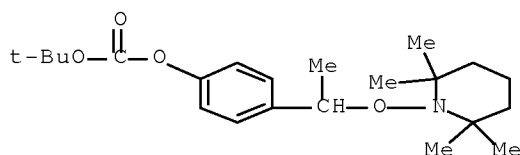
functionalized and biradical initiators for  
nitroxide-mediated radical polymerization)  
IT 94-93-9, N,N'-Disalicylidene-1,2-ethanediamine 1592-20-7,  
4-Vinylbenzyl chloride 2564-83-2, TEMPO 6156-78-1, Manganese  
acetate tetrahydrate 61015-94-9  
(starting material; improved catalytic method for synthesis of  
alkoxyamine functionalized and biradical initiators for  
nitroxide-mediated radical polymerization)  
REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L67 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2003:383971 HCAPLUS Full-text  
DOCUMENT NUMBER: 139:117728  
TITLE: Synthesis and reactivity of functionalized  
alkoxyamine initiators for  
nitroxide-mediated radical polymerization of  
styrene  
AUTHOR(S): Li, Irene Q.; Knauss, Daniel M.; Priddy, Duane B.;  
Howell, Bob A.  
CORPORATE SOURCE: Department of Chemistry and Geochemistry, Colorado  
School of Mines, Golden, CO, 80401, USA  
SOURCE: Polymer International (2003), 52(5), 805-812  
CODEN: PLYIEI; ISSN: 0959-8103  
PUBLISHER: John Wiley & Sons Ltd.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
ED Entered STN: 20 May 2003  
AB The synthesis and examination of different functionalized (2,2,6,6-  
tetramethyl-1-piperidinyloxy free radical) TEMPO-containing alkoxyamine  
initiators for nitroxide-mediated radical polymerization of styrene are  
reported. Initiators with ester and carbonate functional groups were  
synthesized by a low-temperature radical-abstraction reaction of the  
functionalized ethylbenzene in the presence of TEMPO to introduce the  
functional groups onto the initiating chain-end of polystyrene. An initiator  
with two alkoxyamine groups sym. located at each end of a carbonate bond was  
also synthesized and used for nitroxide-mediated styrene polymerization  
Styrene polymerization using these initiators followed first-order kinetics up  
to approx. 60 min at 140° or 30% monomer conversion. Alkoxyamines bearing an  
acetoxo or tert-butylcarbonate group at the p-position of 1-(2,2,6,6-  
tetramethyl- 1-piperidinyloxy)ethylbenzene behave in a similar way to the  
unfunctionalized initiator. With an initiator containing two alkoxyamine  
groups, the resulting polymer mol. weight was twice that of the polymer  
obtained from initiators with only one alkoxyamine group, as expected from  
propagation from both chain-ends. Upon hydrolysis of the carbonate bond,  
equivalent polymer chain growth occurred from each alkoxyamine site in the  
difunctional initiator.  
IT 213699-59-3P 224824-56-0P 562102-19-6P  
562102-23-2P  
(synthesis of TEMPO-containing alkoxyamine initiators  
for radical polymerization of styrene)  
RN 213699-59-3 HCAPLUS  
CN Phenol, 4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]-, acetate  
(ester) (9CI) (CA INDEX NAME)



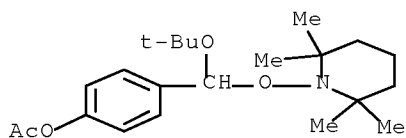
RN 224824-56-0 HCAPLUS

CN Carbonic acid, 1,1-dimethylethyl 4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]phenyl ester (9CI) (CA INDEX NAME)



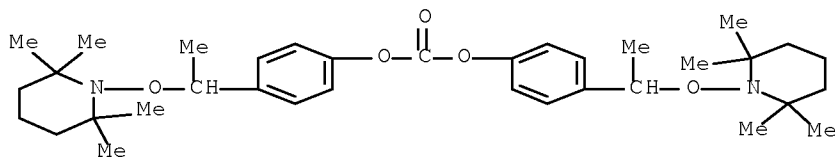
RN 562102-19-6 HCAPLUS

CN Phenol, 4-[(1,1-dimethylethoxy)[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]methyl]-, acetate (ester) (9CI) (CA INDEX NAME)



RN 562102-23-2 HCAPLUS

CN Phenol, 4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]-, carbonate (2:1) (ester) (9CI) (CA INDEX NAME)

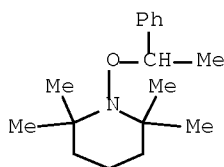


IT 154554-67-3P 562102-22-1P

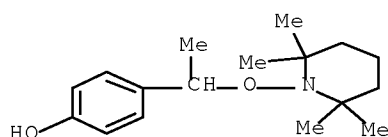
(synthesis of TEMPO-containing alkoxyamine initiators  
for radical polymerization of styrene)

RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



RN 562102-22-1 HCAPLUS  
 CN Phenol, 4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]- (CA  
 INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)  
 ST TEMPO contg alkoxyamine initiator synthesis  
 styrene radical polymn  
 IT Amines, preparation  
 (alkoxylated; synthesis of TEMPO-containing alkoxyamine  
 initiators for radical polymerization of styrene)  
 IT Polydispersity  
 (of polystyrene prepared using TEMPO-containing alkoxyamine  
 initiators)  
 IT Polymerization  
 (radical, solution; of styrene using TEMPO-containing alkoxyamine  
 initiators and synthesis of the initiators)  
 IT Polymerization kinetics  
 (radical; of styrene using TEMPO-containing alkoxyamine  
 initiators and synthesis of the initiators)  
 IT Polymerization catalysts  
 (radical; synthesis of TEMPO-containing alkoxyamine  
 initiators for radical polymerization of styrene)  
 IT Nitroxides  
 (synthesis of TEMPO-containing alkoxyamine initiators  
 for radical polymerization of styrene)  
 IT 9003-53-6P, Polystyrene  
 (radical polymerization of styrene using TEMPO-containing alkoxyamine  
 initiators and synthesis of the initiators)  
 IT 213699-59-3P 224824-56-0P 562102-19-6P  
 562102-23-2P  
 (synthesis of TEMPO-containing alkoxyamine initiators  
 for radical polymerization of styrene)  
 IT 75-44-5, Phosgene 123-07-9, 4-Ethylphenol 1876-22-8,  
 Di-tert-butylperoxyoxalate 2564-83-2, TEMPO 2628-16-2,  
 4-Acetoxy styrene 224824-55-9  
 (synthesis of TEMPO-containing alkoxyamine initiators  
 for radical polymerization of styrene)  
 IT 3245-23-6P, 4-(Acetoxy)ethylbenzene 154554-67-3P  
 562102-22-1P

10/519,030

(synthesis of TEMPO-containing alkoxyamine initiators  
for radical polymerization of styrene)

REFERENCE COUNT: 74 THERE ARE 74 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L67 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2001:247383 HCAPLUS Full-text  
DOCUMENT NUMBER: 134:281264  
TITLE: Polymerization compositions using  
nitrogen-containing free radicals  
INVENTOR(S): Lai, John Ta-yuan; Filla, Deborah S.  
PATENT ASSIGNEE(S): The B.F. Goodrich Company, USA  
SOURCE: PCT Int. Appl., 39 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.             | KIND                                                                                                                                                                                                                                                                                                                                                                       | DATE     | APPLICATION NO. | DATE       |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|------------|
| -----                  | ----                                                                                                                                                                                                                                                                                                                                                                       | -----    | -----           | -----      |
| WO 2001023435          | A1                                                                                                                                                                                                                                                                                                                                                                         | 20010405 | WO 2000-US27038 | 20000929   |
| W:                     | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                 |            |
| RW:                    | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG                                                                                                                                                                                         |          |                 |            |
| EP 1259551             | A1                                                                                                                                                                                                                                                                                                                                                                         | 20021127 | EP 2000-968537  | 20000929   |
| R:                     | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL                                                                                                                                                                                                                                                                         |          |                 |            |
| PRIORITY APPLN. INFO.: |                                                                                                                                                                                                                                                                                                                                                                            |          | US 1999-409329  | A 19990930 |
|                        |                                                                                                                                                                                                                                                                                                                                                                            |          | US 2000-172219P | P 20000110 |
|                        |                                                                                                                                                                                                                                                                                                                                                                            |          | US 1999-172219P | P 19990930 |
|                        |                                                                                                                                                                                                                                                                                                                                                                            |          | WO 2000-US27038 | W 20000929 |

OTHER SOURCE(S): MARPAT 134:281264

ED Entered STN: 06 Apr 2001

AB Nitrogen-containing free radicals and free radical precursors are used to effect efficient, controlled polymerization of polymeric materials, including monomers, to form polymers, including homopolymers, copolymers, and block polymers. In particular, nitroxide compds., methods of making nitroxide compds., methods of using the nitroxide compds. to polymerize monomer compns., and polymer compns. made using the nitroxide compds. are disclosed. Thus, heating tetramethylmorpholine 8.64 with p-xylene 2.66 and Mo oxide 0.2 at reflux, dropwisely adding tert-Bu hydroperoxide (I) 16 over 1 h, refluxing for 20 min, further adding I 20 g while heating for another 1 h and working up gave an adduct useful for radical precursor.

IT 332380-43-5P 332380-44-6P

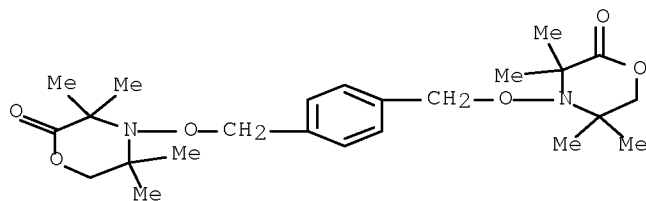
(radical polymerization initiator precursor; polymerization compns.  
using nitrogen-containing free radicals)

RN 332380-43-5 HCAPLUS

CN 2-Morpholinone, 4,4'-[1,4-phenylenebis(methyleneoxy)]bis[3,3,5,5-

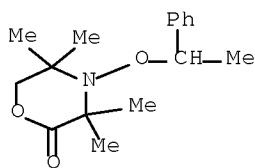
10/519,030

tetramethyl- (9CI) (CA INDEX NAME)



RN 332380-44-6 HCAPLUS

CN 2-Morpholinone, 3,3,5,5-tetramethyl-4-(1-phenylethoxy)- (CA INDEX NAME)



IC ICM C08F004-00  
ICS C08F002-38; C08F293-00; C07D265-32; C07D241-08; C07C239-20  
CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 67  
ST morpholine xylene adduct radical polymn initiator  
IT Polymerization catalysts  
(polymerization compns. using nitrogen-containing free radicals)  
IT 1313-27-5, Molybdenum oxide, uses  
(nitroxide forming catalysts; polymerization compns. using  
nitrogen-containing free radicals)  
IT 332380-43-5P 332380-44-6P  
(radical polymerization initiator precursor; polymerization compns.  
using nitrogen-containing free radicals)  
IT 113872-32-5P  
(radical polymerization initiator; polymerization compns. using  
nitrogen-containing free radicals)  
IT 100-41-4, Ethylbenzene, reactions 106-42-3, p-Xylene, reactions  
90032-83-0, 3,3,5,5-Tetramethyl-2-morpholinone  
(reactant for polymerization initiator precursor; polymerization  
compns. using nitrogen-containing free radicals)  
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L67 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:229230 HCAPLUS Full-text

DOCUMENT NUMBER: 135:33673

TITLE: Thermolysis of Free-Radical Initiators:  
tert-Butylazocumene and Its 1,3- and 1,4-Bisazo  
and 1,3,5-Trisazo Analogues

AUTHOR(S): Engel, Paul S.; Pan, Li; Ying, Yunming; Alemany, Lawrence B.  
 CORPORATE SOURCE: Department of Chemistry, Rice University, Houston, TX, 77251, USA  
 SOURCE: Journal of the American Chemical Society (2001), 123(16), 3706-3715  
 CODEN: JACSAT; ISSN: 0002-7863  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 01 Apr 2001

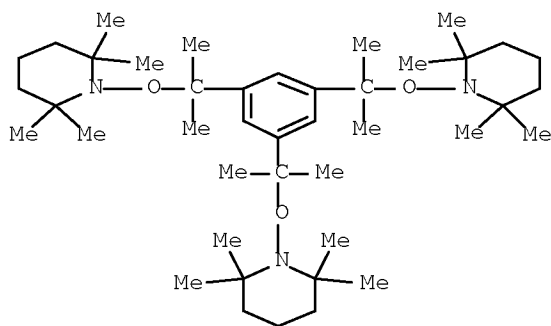
AB Four tert-butylazocumenes (I-IV) were prepared from the corresponding cyanobenzenes, and their nitrogen evolution kinetics and products were analyzed. In combination with TEMPO, the simplest compound, tert-butylazocumene (I), shows promise as a "one-radical" initiator of styrene polymerization. An ABNO-trapped cumyl radical is a particularly stable trialkylhydroxylamine, whose thermolysis half-life is 2.1 h at 150 °C. Taking advantage of this stability, we trapped the cumyl radical centers from IV to afford tris adduct. While the behavior of the meta bisazoalkane III can be mostly predicted from that of I, the para isomer II exhibits both unusual products and kinetics, attributed to the formation of quinodimethane via azo-containing radical. Finally, evidence is presented that IV is a possible initiator of star polymerization of Me methacrylate.

IT 344299-94-1P 344299-95-2P 344299-99-6P

(thermolysis of the free-radical initiators 1,3- and 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

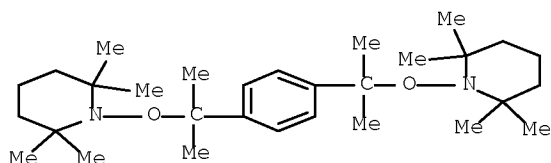
RN 344299-94-1 HCAPLUS

CN Piperidine, 1,1',1''-[1,3,5-benzenetriyltris[(1-methylethylidene)oxy]]tris[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



RN 344299-95-2 HCAPLUS

CN Piperidine, 1,1'-[1,4-phenylenebis[(1-methylethylidene)oxy]]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



RN 344299-99-6 HCAPLUS  
 CN 9-Azabicyclo[3.3.1]nonane, 9,9',9''-[1,3,5-benzenetriyltris[(1-methylethylidene)oxy]]tris- (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

CC 35-3 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 21

ST kinetics thermolysis butylazocumene radical polymn initiator

IT Activation enthalpy  
 Activation entropy  
 Radical scavengers  
 (in relation to thermolysis of the free-radical initiators  
 1,3- and 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT Activation energy  
 Simulation and Modeling, physicochemical  
 (of the thermolysis of the free-radical initiators 1,3-  
 and 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT Polymerization catalysts  
 (radical; in relation to thermolysis of the free-radical  
 initiators 1,3- and 1,4-bisazo and 1,3,5-trisazo  
 tert-butylazocumene analogs)

IT Thermal decomposition  
 Thermal decomposition kinetics  
 (thermolysis of the free-radical initiators 1,3- and  
 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT 40014-21-9P 344299-68-9P 344299-72-5P 344299-76-9P  
 (thermolysis of the free-radical initiators 1,3- and  
 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT 2564-83-2, TEMPO  
 (thermolysis of the free-radical initiators 1,3- and  
 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT 31785-68-9P, 9-Azabicyclo[3.3.1]non-9-yloxy  
 (thermolysis of the free-radical initiators 1,3- and  
 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT 4148-81-6P 7518-53-8P 10365-94-3P, 1,3,5-Tricyanobenzene  
 19937-49-6P 95627-96-6P 344299-83-8P 344299-85-0P  
 (thermolysis of the free-radical initiators 1,3- and  
 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT 585-32-0P, Cumylamine  
 (thermolysis of the free-radical initiators 1,3- and  
 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT 98-83-9, reactions 108-98-5, Thiophenol, reactions 1443-80-7  
 2388-14-9 33581-95-2  
 (thermolysis of the free-radical initiators 1,3- and  
 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

IT 4132-49-4P 4148-93-0P 9003-53-6P, Polystyrene 9011-14-7P, PMMA  
 19956-03-7P 344299-87-2P 344299-88-3P 344299-91-8P  
 344299-92-9P 344299-93-0P 344299-94-1P  
 344299-95-2P 344299-96-3P 344299-97-4P 344299-98-5P  
 344299-99-6P  
 (thermolysis of the free-radical initiators 1,3- and  
 1,4-bisazo and 1,3,5-trisazo tert-butylazocumene analogs)

REFERENCE COUNT: 94 THERE ARE 94 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT



DOCUMENT NUMBER: 132:152244  
 TITLE: Synthesis and properties of polymeric networks prepared by "living" free radical polymerization and end-linking processes  
 AUTHOR(S): Chaumont, Philippe; Asgarzadeh, Firouz; Ourdouillie, Pascal; Beyou, Emmanuel; Mechin, Françoise; Dumon, Michel  
 CORPORATE SOURCE: Unite Mixte de Recherches "Ingenierie des Materiaux Macromoleculaires", Universite, Villeurbanne, 69622, Fr.  
 SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (1999), 40(2), 366-367  
 CODEN: ACPPAY; ISSN: 0032-3934  
 PUBLISHER: American Chemical Society, Division of Polymer Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 02 Sep 1999

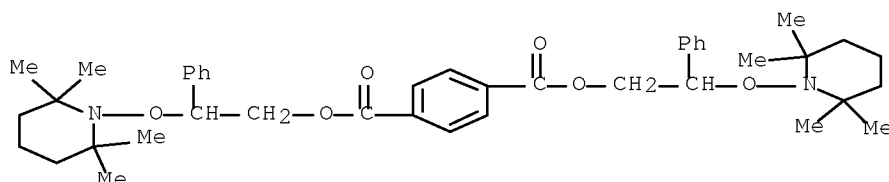
AB Polymer networks were synthesized by "living" free radical polymerization, i.e. the free radical synthesis of difunctional precursors, followed by the crosslinking of these precursors. Three types of controlled polymerization were studied to prepare the precursors and the networks: (a) reversible termination with nitroxide type control agents, (b) atom transfer radical polymerization, and (c) radical addition-fragmentation transfer. The structure and the swelling properties of the gels formed were studied.

IT 257955-86-5P

(free radical control agent; for living free radical polymerization by reversible termination with nitroxide radicals)

RN 257955-86-5 HCAPLUS

CN 1,4-Benzenedicarboxylic acid, bis[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl] ester (9CI) (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT 257955-86-5P

(free radical control agent; for living free radical polymerization by reversible termination with nitroxide radicals)

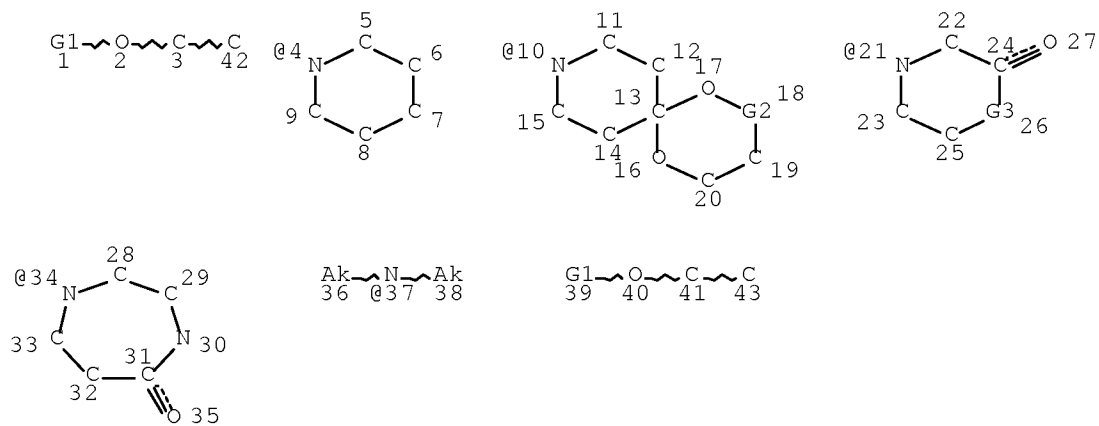
IT 78-67-1, AIBN 7787-70-4, Copper bromide (CuBr) 71071-44-8, 4,4'-Di-n-heptyl-2,2'-bipyridine

(polymerization catalyst; synthesis and properties of polymeric networks prepared by living free radical polymerization and end-linking processes)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

=&gt; d que 168

L1 1 SEA FILE=HCAPLUS ABB=ON PLU=ON US20050215691/PN  
 L5 STR



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REP G2=(0-1) CH2

VAR G3=O/N

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NSPEC IS RC AT 43

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

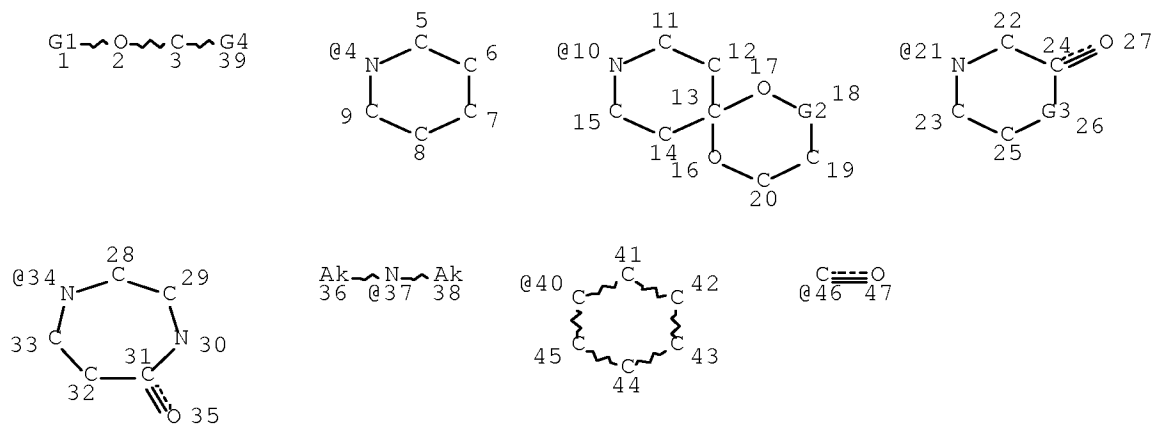
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RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 43

STEREO ATTRIBUTES: NONE

L9 STR



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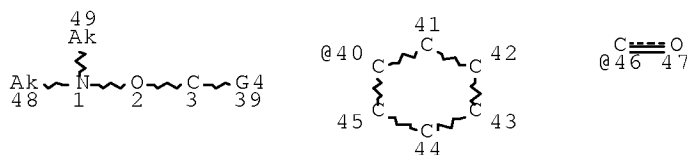
10/519,030

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VAR G4=46/40  
NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 47

STEREO ATTRIBUTES: NONE

L11 7221 SEA FILE=REGISTRY SSS FUL L9  
L14 694 SEA FILE=REGISTRY SUB=L11 SSS FUL L5  
L17 STR

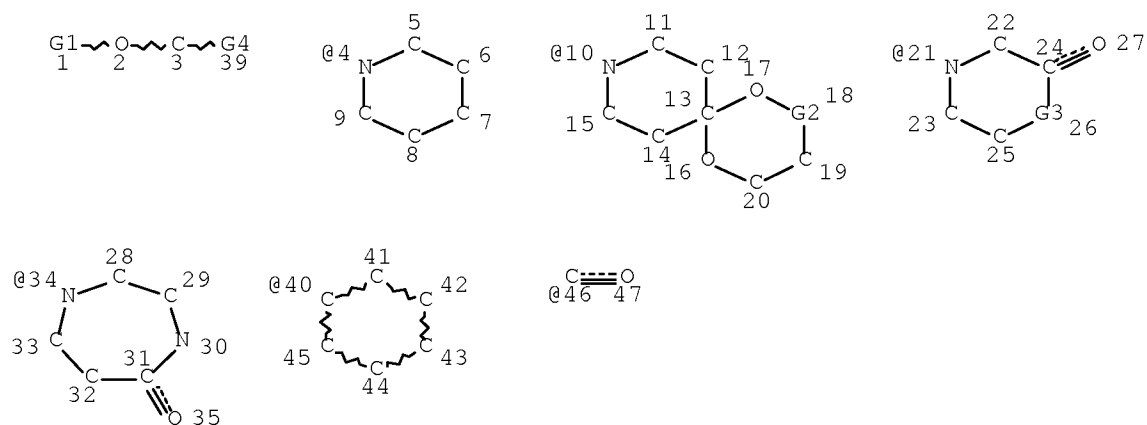


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NUMBER OF NODES IS 14

STEREO ATTRIBUTES: NONE

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L21 STR



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REP G2=(0-1) CH2  
VAR G3=O/N  
VAR G4=46/40

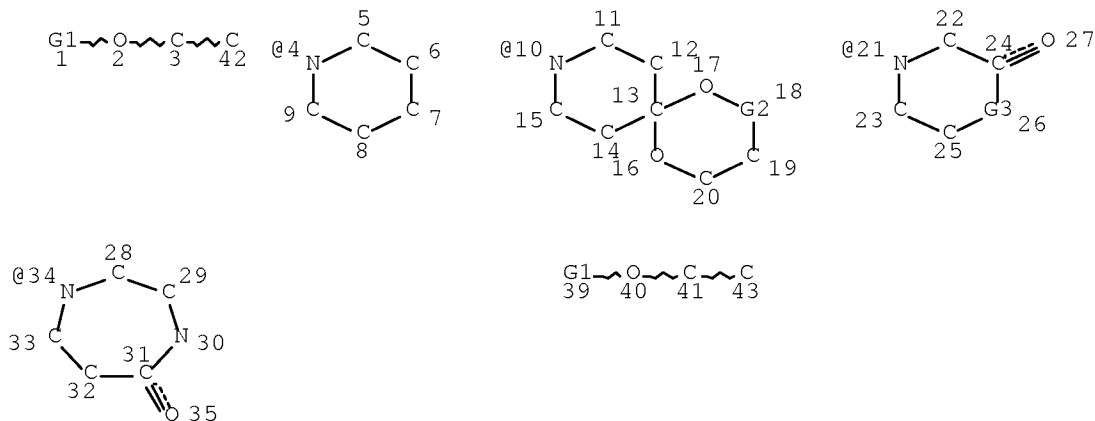
10/519,030

NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

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RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 44

STEREO ATTRIBUTES: NONE

L23 2091 SEA FILE=REGISTRY SUB=L11 SSS FUL L21  
L24 262 SEA FILE=HCAPLUS ABB=ON PLU=ON L14  
L25 144 SEA FILE=HCAPLUS ABB=ON PLU=ON L19  
L29 209 SEA FILE=HCAPLUS ABB=ON PLU=ON L24(L)PREP/RL  
L32 74 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND (PLASTIC? OR  
POLYMER?)/SC, SX  
L33 60 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND (INITIAT? OR  
CATALYST? OR ACTIVAT?)  
L34 58 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 NOT L19  
L35 STR



VAR G1=4/10/21/34

REP G2=(0-1) CH2

VAR G3=O/N

NODE ATTRIBUTES:

NSPEC IS RC AT 42

NSPEC IS RC AT 43

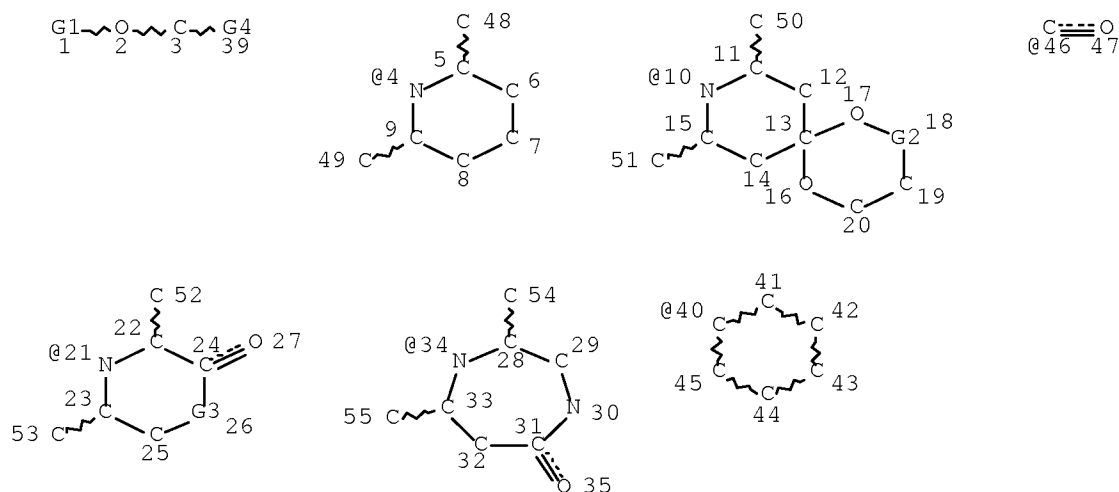
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DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
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NUMBER OF NODES IS 40

STEREO ATTRIBUTES: NONE

L37 198 SEA FILE=REGISTRY SUB=L14 SSS FUL L35  
L38 96 SEA FILE=HCAPLUS ABB=ON PLU=ON L37  
L39 40 SEA FILE=HCAPLUS ABB=ON PLU=ON L34 AND L38  
L42 STR



VAR G1=4/10/21/34

REP G2=(0-1) CH2

VAR G3=O/N

VAR G4=46/40

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 52

STEREO ATTRIBUTES: NONE

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| L44 | 1677 | SEA FILE=REGISTRY SUB=L23 SSS FUL L42                                      |
| L45 | 614  | SEA FILE=HCAPLUS ABB=ON PLU=ON L44                                         |
| L46 | 399  | SEA FILE=HCAPLUS ABB=ON PLU=ON L45(L)PREP/RL                               |
| L47 | 271  | SEA FILE=HCAPLUS ABB=ON PLU=ON L46 AND (PLASTIC? OR POLYMER?)/SC, SX       |
| L48 | 208  | SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND (INITIAT? OR CATALYST? OR ACTIVAT?) |
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| L50 | 2    | SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND CLAY?                               |
| L51 | 4    | SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND POF/RL                              |
| L52 | 174  | SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND CAT/RL                              |
| L53 | 6    | SEA FILE=HCAPLUS ABB=ON PLU=ON L52 AND MOA/RL                              |
| L54 | 15   | SEA FILE=HCAPLUS ABB=ON PLU=ON L52 AND (PEP OR PYP)/RL                     |
| L55 | 22   | SEA FILE=HCAPLUS ABB=ON PLU=ON (L49 OR L50 OR L51) OR (L53 OR L54)         |
| L56 | 13   | SEA FILE=HCAPLUS ABB=ON PLU=ON L25 AND L46                                 |
| L57 | 35   | SEA FILE=HCAPLUS ABB=ON PLU=ON L55 OR L56                                  |
| L58 | 6    | SEA FILE=HCAPLUS ABB=ON PLU=ON L39 AND ALKOXYAMINE INITIATOR?              |
| L59 | 40   | SEA FILE=HCAPLUS ABB=ON PLU=ON L39 OR L58                                  |
| L60 | 5    | SEA FILE=HCAPLUS ABB=ON PLU=ON L57 AND ALKOXYAMINE INITIATOR?              |
| L61 | 35   | SEA FILE=HCAPLUS ABB=ON PLU=ON L57 OR L60                                  |
| L62 | 26   | SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND ALKOXYAMINE INITIATOR?              |
| L63 | 26   | SEA FILE=HCAPLUS ABB=ON PLU=ON L62 AND (PLASTIC? OR                        |

10/519,030

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POLYMER?)/SC, SX
L64 56 SEA FILE=HCAPLUS ABB=ON PLU=ON L61 OR L63
L65 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L38 AND ALKOXYAMINE
 INITIATOR?
L66 40 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 OR L65
L67 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L64 AND L66
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=> sel 168 hit rn 1-
E58 THROUGH E256 ASSIGNED

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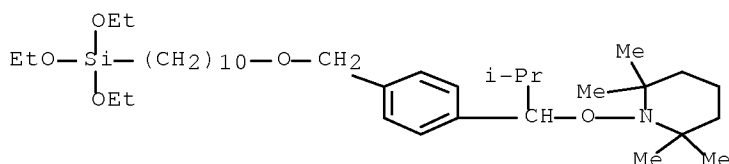
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L68 ANSWER 1 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:772026 HCAPLUS Full-text
DOCUMENT NUMBER: 147:323380
TITLE: Site-selective surface-initiated
 polymerization by Langmuir-Blodgett lithography
AUTHOR(S): Brinks, Marion K.; Hirtz, Michael; Chi, Lifeng;
 Fuchs, Harald; Studer, Armido
CORPORATE SOURCE: Organisch-Chemisches Institut and NRW Graduate
 School of Chemistry, Westfaelische
SOURCE: Wilhelms-Universitaet, Muenster, 48149, Germany
 Angewandte Chemie, International Edition (2007),
 46(27), 5231-5233
 CODEN: ACIEF5; ISSN: 1433-7851
PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 147:323380
ED Entered STN: 17 Jul 2007
AB Brushing the surface: Structured polymer brushes are readily prepared by site-
 selective immobilization of initiators in a self-assembly process by Langmuir-
 Blodgett lithog. with subsequent polymerization The AFM images show a
 DPPC/alkoxy amine LB film before and after surface-initiated controlled
 nitroxide-mediated radical polymerization Large surface areas (several cm2)
 can readily be structured with this method.
IT 947770-00-5P
 (synthesis of alkoxy amines and site-selective immobilization
 thereof by Langmuir-Blodgett lithog. for preparation of polymer brushes)
RN 947770-00-5 HCAPLUS
CN Piperidine, 2,2,6,6-tetramethyl-1-[2-methyl-1-[4-[[[10-
 (triethoxysilyl)decyl]oxy)methyl]phenyl]propoxy]- (CA INDEX NAME)

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CC 35-4 (Chemistry of Synthetic High Polymers)
ST initiator lithog nitroxide radical polymn polymer brush
 prepn

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- IT Lithography  
Self-assembly  
(for site-selective immobilization of initiators for  
preparation of polymer brushes)
- IT Polymerization  
(graft; preparation of polymer brushes with site-selective  
immobilization of initiators by Langmuir-Blodgett lithog.  
and subsequent radical polymerization)
- IT Polymer brushes  
(preparation of polymer brushes with site-selective immobilization of  
initiators by Langmuir-Blodgett lithog. and subsequent  
radical polymerization)
- IT Polymerization  
(radical; preparation of polymer brushes with site-selective  
immobilization of initiators by Langmuir-Blodgett lithog.  
and subsequent radical polymerization)
- IT Polymerization catalysts  
(radical; synthesis of alkoxy amines and site-selective  
immobilization thereof by Langmuir-Blodgett lithog. for preparation of  
polymer brushes)
- IT Polymerization  
(surface; preparation of polymer brushes with site-selective  
immobilization of initiators by Langmuir-Blodgett lithog.  
and subsequent radical polymerization)
- IT 9003-49-0P, Butyl acrylate homopolymer 9003-53-6P, Polystyrene  
(grafted on silica layer on silicon wafer; preparation of polymer  
brushes with site-selective immobilization of initiators  
by Langmuir-Blodgett lithog. and subsequent radical polymerization)
- IT 154554-67-3 897033-80-6  
(preparation of polymer brushes with site-selective immobilization of  
initiators by Langmuir-Blodgett lithog. and subsequent  
radical polymerization)
- IT 63-89-8, L- $\alpha$ -Dipalmitoylphosphatidylcholine  
(preparation of polymer brushes with site-selective immobilization of  
initiators by Langmuir-Blodgett lithog. and subsequent  
radical polymerization)
- IT 7631-86-9P, Silica, preparation  
(surface layer, polystyrene- or poly(Bu acrylate)-grafted; preparation  
of polymer brushes with site-selective immobilization of  
initiators by Langmuir-Blodgett lithog. and subsequent  
radical polymerization)
- IT 947770-00-5P 947770-04-9P  
(synthesis of alkoxy amines and site-selective immobilization  
thereof by Langmuir-Blodgett lithog. for preparation of polymer brushes)
- IT 947769-94-0P 947769-95-1P 947769-96-2P  
947769-97-3P 947769-98-4P 947769-99-5P  
947770-01-6P 947770-02-7P 947770-03-8P  
(synthesis of alkoxy amines and site-selective immobilization  
thereof by Langmuir-Blodgett lithog. for preparation of polymer brushes)
- IT 7440-21-3, Silicon, miscellaneous  
(wafer, substrate; preparation of polymer brushes with site-selective  
immobilization of initiators by Langmuir-Blodgett lithog.  
and subsequent radical polymerization)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 2 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2007:221012 HCAPLUS Full-text  
DOCUMENT NUMBER: 146:442107

TITLE: Highly controlled living radical polymerization through dual activation of organobismuthines

AUTHOR(S): Yamago, Shigeru; Kayahara, Eiichi; Kotani, Masashi; Ray, Biswajit; Kwak, Yungwan; Goto, Atsushi; Fukuda, Takeshi

CORPORATE SOURCE: Div. Mol. Mater. Sci., Grad. Sch. Sci., Osaka City Univ., Osaka, 558-8585, Japan

SOURCE: Angewandte Chemie, International Edition (2007), 46(8), 1304-1306  
CODEN: ACIEF5; ISSN: 1433-7851

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 146:442107

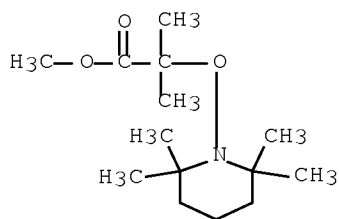
ED Entered STN: 01 Mar 2007

AB Organobismuthines promote highly controlled living radical polymerization through two activation mechanisms, namely, thermal generation and degenerative transfer. Both conjugated and nonconjugated vinyl monomers are polymerized to give well-defined polymers with predetd. mol. weight (Mn) and low polydispersity index (PDI).

IT 115191-52-1P  
(highly controlled living radical polymerization of vinyl monomers through dual activation of organobismuthines)

RN 115191-52-1 HCAPLUS

CN Propanoic acid, 2-methyl-2-[(2,2,6,6-tetramethyl-1-piperidinyloxy]-, methyl ester (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

ST vinyl monomer living radical polymn organobismuthine activation mechanism

IT Polymerization  
Polymerization catalysts  
Polymerization kinetics  
(living, radical; highly controlled living radical polymerization of vinyl monomers through dual activation of organobismuthines)

IT 934733-52-5P 934733-53-6P  
(highly controlled living radical polymerization of vinyl monomers through dual activation of organobismuthines)

IT 100-42-5, Styrene, reactions  
(highly controlled living radical polymerization of vinyl monomers through dual activation of organobismuthines)

IT 6180-99-0DP, Tributyltin deuteride, reaction products with polystyrene and organobismuthines 9003-39-8P, Poly(N-vinylpyrrolidone)  
9003-49-0P, Poly(butyl acrylate) 9003-53-6DP, Polystyrene, reaction products with organobismuthines and tributyltin deuteride  
9003-53-6P, Polystyrene 9011-14-7P, Poly(methyl methacrylate)



10/519,030

21735-64-8P 25189-55-3P, Poly(N-isopropylacrylamide)  
115191-52-1P 733045-97-1P, Styrene-N-vinylpyrrolidone  
diblock copolymer 934733-52-5DP, reaction products with polystyrene  
and tributyltin deuteride

(highly controlled living radical polymerization of vinyl monomers through  
dual activation of organobismuthines)

IT 78-82-0, Isobutyronitrile 80-62-6 141-32-2 547-63-7, Methyl  
isobutyrate 2210-25-5 4540-16-3 7529-35-3, Dimethylbromobismuth  
39248-62-9, Diphenylbismuth bromide

(preparation of organobismuthines for highly controlled living radical  
polymerization of vinyl monomers through dual activation of  
organobismuthines)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 3 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:1183825 HCAPLUS Full-text

DOCUMENT NUMBER: 146:101482

TITLE: Stabilization of polystyrene thin films against  
dewetting by silsesquioxane-terminated polystyrene  
additives

AUTHOR(S): Miyamoto, Kyota; Hosaka, Nao; Otsuka, Hideyuki;  
Takahara, Atsushi

CORPORATE SOURCE: Graduate School of Engineering, Kyushu University,  
Higashi-ku, Fukuoka, 812-8581, Japan

SOURCE: Chemistry Letters (2006), 35(10), 1098-1099  
CODEN: CMLTAG; ISSN: 0366-7022

PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 146:101482

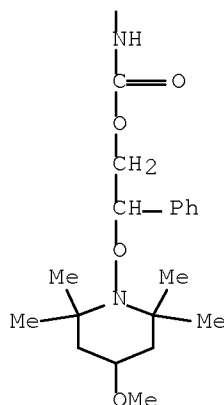
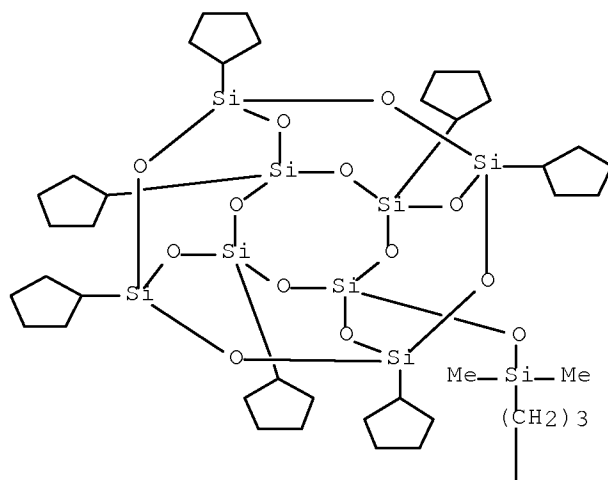
ED Entered STN: 10 Nov 2006

AB A polyhedral oligomeric silsesquioxane (POSS)-containing initiator for  
nitroxide-mediated radical polymerization was synthesized to prepare organic-  
inorg. hybrid polymers (PS-POSS), which are polystyrene (PS) with a POSS end  
group. PS-POSS were well dispersed in PS thin films and provided thermal  
stability to films against dewetting.

IT 917594-78-6P  
(stabilization of polystyrene thin films against dewetting by  
silsesquioxane-terminated polystyrene additives prepared by using  
polyhedral oligomeric silsesquioxane-containing nitroxide derivative as  
radical polymerization catalyst)

RN 917594-78-6 HCAPLUS

CN Carbamic acid, N-[3-[[[(3,5,7,9,11,13,15-heptacyclopentylpentacyclo[9.5  
.1.13,9.15,15.17,13]octasiloxan-1-yl)oxy]dimethylsilyl]propyl]-,  
2-[(4-methoxy-2,2,6,6-tetramethyl-1-piperidinyl)oxy]-2-phenylethyl  
ester (CA INDEX NAME)



- CC 37-3 (Plastics Manufacture and Processing)
- ST polyhedral oligomeric silsesquioxane terminated polystyrene prepn;  
nitroxide deriv oligomeric silsesquioxane group initiator  
polystyrene polymn
- IT Wetting  
(dewetting; stabilization of polystyrene thin films against  
dewetting by silsesquioxane-terminated polystyrene additives prepared  
by using polyhedral oligomeric silsesquioxane-containing nitroxide  
derivative as radical polymerization catalyst)
- IT Polymerization  
Polymerization catalysts  
(radical; stabilization of polystyrene thin films against dewetting  
by silsesquioxane-terminated polystyrene additives prepared by using  
polyhedral oligomeric silsesquioxane-containing nitroxide derivative as  
radical polymerization catalyst)
- IT 917594-78-6P

(stabilization of polystyrene thin films against dewetting by silsesquioxane-terminated polystyrene additives prepared by using polyhedral oligomeric silsesquioxane-containing nitroxide derivative as radical polymerization catalyst)

IT 9003-53-6DP, Polystyrene, polyhedral oligomeric silsesquioxane group-terminated

(stabilization of polystyrene thin films against dewetting by silsesquioxane-terminated polystyrene additives prepared by using polyhedral oligomeric silsesquioxane-containing nitroxide derivative as radical polymerization catalyst)

IT 9003-53-6, Polystyrene

(stabilization of polystyrene thin films against dewetting by silsesquioxane-terminated polystyrene additives prepared by using polyhedral oligomeric silsesquioxane-containing nitroxide derivative as radical polymerization catalyst)

IT 352538-81-9 491588-90-0

(stabilization of polystyrene thin films against dewetting by silsesquioxane-terminated polystyrene additives prepared by using polyhedral oligomeric silsesquioxane-containing nitroxide derivative as radical polymerization catalyst)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 4 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:681741 HCAPLUS Full-text

DOCUMENT NUMBER: 145:293386

TITLE: Synthesis of poly(methyl methacrylate)-b-polystyrene containing a crown ether unit at the junction point via combination of atom transfer radical polymerization and nitroxide mediated radical polymerization routes

AUTHOR(S): Altintas, Ozcan; Yilmaz, Ismail; Hizal, Gurkan; Tunca, Umit

CORPORATE SOURCE: Department of Chemistry, Istanbul Technical University, Istanbul, 34469, Turk.

SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (2006), 44(10), 3242-3249  
CODEN: JPACEC; ISSN: 0887-624X

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 14 Jul 2006

AB Poly(Me methacrylate)-b-polystyrene (PMMA-b-PS) containing a benzo-15-crown-5 unit at the junction point was prepared by combining atom transfer radical polymerization and nitroxide-mediated radical polymerization For this purpose, 6,7,9,10,12,13,15,16-octahydro-5,8,11,14,17-pentaoxa- benzocyclopentadecene-2-carboxylic acid 3-(2-bromo-2-methyl- propionyloxy)-2-methyl-2-[2-phenyl-2-(2,2,6,6-tetramethyl-piperidin-1- yloxy)-ethoxycarbonyl]-Pr ester (I) was synthesized and used as an initiator in atom transfer radical polymerization of Me methacrylate in the presence of CuCl and pentamethyldiethylenetriamine at 60°. A linear behavior was observed in both plots of  $\ln([M]_0/[M])$  vs. time and  $M_n$ , GPC vs. conversion indicating that the polymerization proceeded in a controlled/living manner. Thus obtained PMMA precursor was used as a macroinitiator in nitroxide-mediated radical polymerization of styrene (St) at 125° to give well-defined PMMA-b-PS with crown ether per chain. Kinetic data were also obtained for copolymn. Moreover, potassium picrate (K<sup>+</sup> picrate) complexation of I and PMMA-b-PS copolymer was studied.

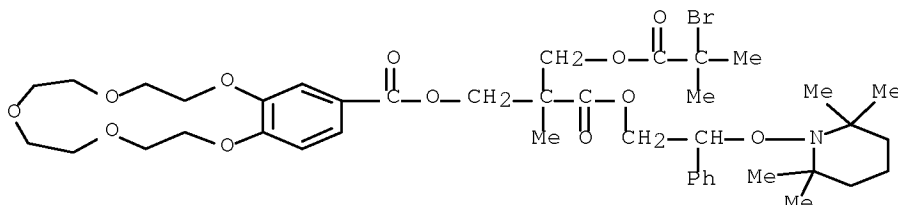
IT 908128-11-0P

(initiator; synthesis of poly(Me methacrylate)-b-

polystyrene containing crown ether unit at junction point via combination of atom transfer radical polymerization and nitroxide mediated radical polymerization routes)

RN 908128-11-0 HCAPLUS

CN 1,4,7,10,13-Benzopentaoxacyclopentadecin-15-carboxylic acid, 2,3,5,6,8,9,11,12-octahydro-, 2-[(2-bromo-2-methyl-1-oxopropoxy)methyl]-2-methyl-3-oxo-3-[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethoxy]propyl ester (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

ST polymethyl methacrylate polystyrene diblock copolymer crown ether nitroxide initiator; atom transfer radical polymn polymethyl methacrylate polystyrene diblock copolymer

IT Polymerization

Polymerization catalysts

Polymerization kinetics

(atom transfer, radical; synthesis of poly(Me methacrylate)-b-polystyrene containing crown ether unit at junction point via combination of atom transfer radical polymerization and nitroxide mediated radical polymerization routes)

IT 908128-11-0P

(initiator; synthesis of poly(Me methacrylate)-b-polystyrene containing crown ether unit at junction point via combination of atom transfer radical polymerization and nitroxide mediated radical polymerization routes)

IT 9011-14-7DP, Poly(methyl methacrylate), reaction products with nitroxide-containing benzo-15-crown-5 derivs. 908128-11-0DP, reaction products with poly(Me methacrylate)

(macroinitiator; synthesis of poly(Me methacrylate)-b-polystyrene containing crown ether unit at junction point via combination of atom transfer radical polymerization and nitroxide mediated radical

polymerization

routes)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 5 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:632708 HCAPLUS Full-text

DOCUMENT NUMBER: 145:231158

TITLE: Exfoliated Block Copolymer/Silicate Nanocomposites by One-Pot, One-Step in-Situ Living Polymerization from Silicate-Anchored Multifunctional Initiator

AUTHOR(S): Di, Jianbo; Sogah, Dotsevi Y.

CORPORATE SOURCE: Baker Laboratory, Department of Chemistry and Chemical Biology, Cornell University, Ithaca, NY,

SOURCE: 14853-1301, USA  
 Macromolecules (2006), 39(15), 5052-5057  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

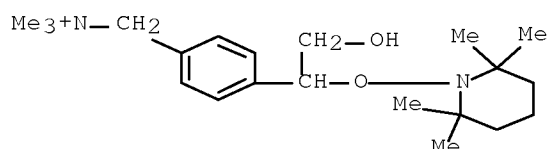
ED Entered STN: 30 Jun 2006

AB Poly(styrene-*b*-caprolactone)/silicate nanocomposites were prepared via one-pot, one-step in-situ living polymerization from a silicate-anchored bifunctional initiator. The random dispersion of the silicate layers in the polymer matrix was confirmed by both XRD and STEM. The polymer chains were attached to the surface of the silicate layers at the junction between the two blocks. SEC and NMR confirmed the block structure of the polymer. Through simultaneous incorporation of the initiator and benzyltrimethylammonium salt as a noninitiator into the silicate nanocomposites containing higher mol. weight polymers were obtained. The mol. wts. of the polymers and the silicate content of the nanocomposites were also controlled. Characterization by XRD and DSC showed that the poly(caprolactone) segment existed in a crystalline state.

IT 887369-62-2P  
 (ATRP initiator, clay anchored; preparation of multifunctional initiator for living polymerization to prepare exfoliated block copolymer/silicate nanocomposites)

RN 887369-62-2 HCAPLUS

CN Benzenemethanaminium, 4-[2-hydroxy-1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]-N,N,N-trimethyl-, chloride (9CI) (CA INDEX NAME)



● Cl<sup>-</sup>

CC 37-6 (Plastics Manufacture and Processing)

Section cross-reference(s): 35

ST styrene caprolactone block copolymer silicate nanocomposite  
 multifunctional initiator ATRP

IT Polymerization  
 (atom transfer, living, radical; exfoliated block copolymer/silicate nanocomposites by one-pot, one-step in-situ living polymerization from silicate-anchored multifunctional initiator)

IT Intercalation  
 Nanocomposites  
 (exfoliated block copolymer/silicate nanocomposites by one-pot, one-step in-situ living polymerization from silicate-anchored multifunctional initiator)

IT Silicates, preparation  
 (intercalation product with  $\epsilon$ -Caprolactone-styrene diblock copolymer; exfoliated block copolymer/silicate nanocomposites by one-pot, one-step in-situ living polymerization from silicate-anchored

multifunctional initiator)

IT 887369-62-2P  
(ATRP initiator, clay anchored; preparation of multifunctional initiator for living polymerization to prepare exfoliated block copolymer/silicate nanocomposites)

IT 97-93-8, Triethyl aluminum, uses  
(exfoliated block copolymer/silicate nanocomposites by one-pot, one-step in-situ living polymerization from silicate-anchored multifunctional initiator)

IT 1318-93-0DP, Montmorillonite, sodium-exchanged, intercalation product with  $\epsilon$ -Caprolactone-styrene diblock copolymer 725712-80-1DP,  $\epsilon$ -Caprolactone-styrene diblock copolymer, intercalation product with sodium-exchanged montmorillonite  
(exfoliated block copolymer/silicate nanocomposites by one-pot, one-step in-situ living polymerization from silicate-anchored multifunctional initiator)

IT 75-50-3, Trimethylamine, reactions 196930-68-4  
(preparation of multifunctional initiator for living polymerization to prepare exfoliated block copolymer/silicate nanocomposites)

IT 100-59-4, Phenyl magnesiumchloride  
(preparation of multifunctional initiator for living polymerization to prepare exfoliated block copolymer/silicate nanocomposites)

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 6 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:1108314 HCAPLUS Full-text

DOCUMENT NUMBER: 144:433168

TITLE: New and improved routes to alkoxyamine initiators for controlled radical polymerisation

AUTHOR(S): Thiessen, Wladimir; Wolff, Thomas

CORPORATE SOURCE: Institut fuer Physikalische Chemie und Elektrochemie, Technische Universitaet Dresden, Dresden, D-01062, Germany

SOURCE: Designed Monomers and Polymers (2005), 8(5), 397-407

CODEN: DMPOF3; ISSN: 1385-772X

PUBLISHER: VSP

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 17 Oct 2005

AB O-substituted,hydroxylamines were synthesized in almost quant. yields using ultrasound and Mn(OAc)3 (in substance or regenerated in situ by an oxidizing agent) as electron-transfer agent. Two novel synthetic methods for the synthesis of alkoxyamines from organic halides and stable nitroxide radicals are introduced. One of them utilizes cyanocobalamine (vitamin B12), the other SmI2 as catalyst and magnesium metal as reductive agent. The yields are good for the first method and excellent for the second. The initiators were tested in controlled radical polymerization of styrene, Me methacrylate and 4-vinylpyridine.

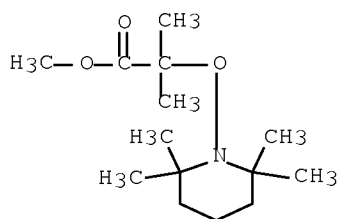
IT 115191-52-1P

(production of alkoxyamine initiators using

Mn(OAc)3 as electron-transfer agent for controlled radical polymerization)

RN 115191-52-1 HCAPLUS

CN Propanoic acid, 2-methyl-2-[(2,2,6,6-tetramethyl-1-piperidinyloxy]-, methyl ester (CA INDEX NAME)

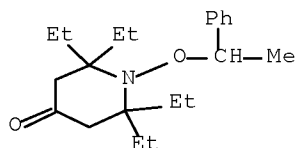


- CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 67
- ST alkoxyamine initiator controlled radical polymn
- IT Electron exchangers  
Oxidizing agents  
Sound and Ultrasound  
(production of alkoxyamine initiators for controlled radical polymerization)
- IT Polymerization catalysts  
(radical; production of alkoxyamine initiators for controlled radical polymerization)
- IT 993-02-2, Manganese triacetate  
(electron-transfer agent; production of alkoxyamine initiators using Mn(OAc)<sub>3</sub> as electron-transfer agent for controlled radical polymerization)
- IT 9011-14-7P, Polymethylmethacrylate 25232-41-1P, Poly(4-vinylpyridine)  
(polymerization of Me methacrylate using alkoxyamine initiators as controlled radical polymerization catalyst)
- IT 9003-53-6P, Polystyrene  
(polymerization of styrene using alkoxyamine initiators as controlled radical polymerization catalyst)
- IT 115191-52-1P 213699-59-3P  
(production of alkoxyamine initiators using Mn(OAc)<sub>3</sub> as electron-transfer agent for controlled radical polymerization)
- IT 80-62-6, Methylmethacrylate 100-42-5, Styrene, reactions 2564-83-2  
2628-16-2 188526-94-5, tert-Butyl 1-(diethoxyphosphinyl)-2,2-dimethylpropyl nitroxide  
(production of alkoxyamine initiators using Mn(OAc)<sub>3</sub> as electron-transfer agent for controlled radical polymerization)
- IT 144-55-8, Sodium bicarbonate, reactions  
(production of alkoxyamine initiators using Mn(OAc)<sub>3</sub> as electron-transfer agent for controlled radical polymerization)
- IT 32248-43-4, Samarium diiodide  
(production of alkoxyamine initiators using SmI<sub>2</sub> as catalyst for controlled radical polymerization)
- IT 224575-62-6P  
(production of alkoxyamine initiators using SmI<sub>2</sub> as catalyst for controlled radical polymerization)
- IT 68-19-9, Vitamin B12  
(production of alkoxyamine initiators using as vitamin B12 catalyst for controlled radical polymerization)
- IT 103-63-9P  
(production of alkoxyamine initiators using as vitamin B12 catalyst for controlled radical polymerization)
- IT 154554-67-3P, 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine  
(production of alkoxyamine initiators using as vitamin B12 catalyst for controlled radical polymerization)

10/519,030

IT 12125-02-9, Ammonium chloride, reactions  
(production of alkoxyamine initiators using as  
vitamin B12 catalyst for controlled radical polymerization)  
IT 7439-95-4, Magnesium, reactions  
(reductive agent; production of alkoxyamine  
initiators using SmI2 as catalyst for controlled radical  
polymerization)  
REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

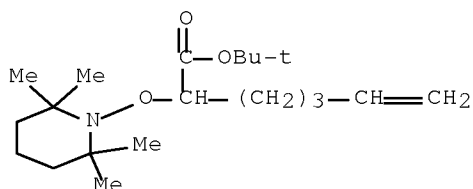
L68 ANSWER 7 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2005:609683 HCAPLUS Full-text  
DOCUMENT NUMBER: 143:286754  
TITLE: Nitroxide-Mediated Polymerization of  
N-Isopropylacrylamide: Electrospray Ionization  
Mass Spectrometry, Matrix-Assisted Laser  
Desorption Ionization Mass Spectrometry, and  
Multiple-Angle Laser Light Scattering Studies on  
Nitroxide-Terminated Poly-N-isopropylacrylamides  
AUTHOR(S): Schulte, Tobias; Siegenthaler, Kai Oliver;  
Luftmann, Heinrich; Letzel, Matthias; Studer,  
Armido  
CORPORATE SOURCE: Organisch-Chemisches Institut, Westfaelische  
Wilhelms-Universitaet Muenster, Muenster, D-48149,  
Germany  
SOURCE: Macromolecules (2005), 38(16), 6833-6840  
CODEN: MAMOBX; ISSN: 0024-9297  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
ED Entered STN: 15 Jul 2005  
AB Nitroxide-mediated controlled living free radical polymerization of N-  
isopropylacrylamide using highly sterically hindered 2,2,6,6-  
tetraethylpiperidin-4-on-N-oxyl 1 is described. In addition, an improved  
synthesis for nitroxide 1 is presented. Poly-N- isopropylacrylamides  
(PNIPAMs) prepared are analyzed by multiple-angle laser light scattering.  
Moreover, the nitroxide-terminated PNIPAMs are characterized using  
electrospray ionization mass spectrometry, matrix-assisted laser desorption  
ionization time-of-flight mass spectrometry (MALDI-TOF-MS), and Fourier  
transform ion cyclotron MALDI-MS. Careful MS anal. reveals that chain-end  
degradation of nitroxide-terminated PNIPAMs occurs during MALDI anal. A  
mechanism for chain end degradation is presented.  
IT 686778-17-6F  
(preparation of tetraethylpiperidinonoxyl and alkoxyamine-  
initiated living radical polymerization of isopropylacrylamide and  
study of structure and chain-end degradation of nitroxide-terminated  
polyisopropylacrylamide)  
RN 686778-17-6 HCAPLUS  
CN 4-Piperidinone, 2,2,6,6-tetraethyl-1-(1-phenylethoxy)- (CA INDEX  
NAME)





- CC 35-4 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 27
- ST living radical polymn isopropylacrylamide alkoxyamine  
initiator; nitroxide terminated living polyisopropylacrylamide  
mass spectrometry light scattering
- IT Polymer degradation  
(chain end degradation mechanism; preparation of tetraethylpiperidinonoxyl  
and alkoxyamine-initiated living radical polymerization of  
isopropylacrylamide and study of structure and chain-end degradation of  
nitroxide-terminated polyisopropylacrylamide)
- IT Polymerization  
Polymerization catalysts  
(living, radical; preparation of tetraethylpiperidinonoxyl and  
alkoxyamine-initiated living radical polymerization of  
isopropylacrylamide and study of structure and chain-end degradation of  
nitroxide-terminated polyisopropylacrylamide)
- IT Electrospray ionization mass spectrometry  
Light scattering  
Photoionization mass spectrometry  
(preparation of tetraethylpiperidinonoxyl and alkoxyamine-  
initiated living radical polymerization of isopropylacrylamide and  
study of structure and chain-end degradation of nitroxide-terminated  
polyisopropylacrylamide using)
- IT 686778-17-6P  
(preparation of tetraethylpiperidinonoxyl and alkoxyamine-  
initiated living radical polymerization of isopropylacrylamide and  
study of structure and chain-end degradation of nitroxide-terminated  
polyisopropylacrylamide)
- IT 25189-55-3DP, N-Isopropylacrylamide homopolymer, alkoxyamine-  
terminated 686778-08-5DP, reaction products with  
poly(N-isopropylacrylamide)  
(preparation of tetraethylpiperidinonoxyl and alkoxyamine-  
initiated living radical polymerization of isopropylacrylamide and  
study of structure and chain-end degradation of nitroxide-terminated  
polyisopropylacrylamide)
- IT 760-21-4, 2-Ethyl-1-butene 1189-71-5, Chlorosulfonyl isocyanate  
24424-99-5, Di-tert-butyl dicarbonate  
(preparation of tetraethylpiperidinonoxyl and alkoxyamine-  
initiated living radical polymerization of isopropylacrylamide and  
study of structure and chain-end degradation of nitroxide-terminated  
polyisopropylacrylamide)
- IT 89894-89-3P 864062-67-9P 864062-68-0P 864062-69-1P  
864062-70-4P  
(preparation of tetraethylpiperidinonoxyl and alkoxyamine-  
initiated living radical polymerization of isopropylacrylamide and  
study of structure and chain-end degradation of nitroxide-terminated  
polyisopropylacrylamide)
- IT 686778-08-5P  
(preparation of tetraethylpiperidinonoxyl and alkoxyamine-  
initiated living radical polymerization of isopropylacrylamide and  
study of structure and chain-end degradation of nitroxide-terminated  
polyisopropylacrylamide)
- REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

DOCUMENT NUMBER: 143:59393  
 TITLE: Tin-free radical alkoxyamine addition and isomerization reactions by using the persistent radical effect: Variation of the alkoxyamine structure  
 AUTHOR(S): Molawi, Kian; Schulte, Tobias; Siegenthaler, Kai Oliver; Wetter, Christian; Studer, Armido  
 CORPORATE SOURCE: Organisch Chemisches-Institut Westfaelische Wilhelms-Universitaet, Muenster, 48149, Germany  
 SOURCE: Chemistry--A European Journal (2005), 11(8), 2335-2350  
 CODEN: CEUJED; ISSN: 0947-6539  
 PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 143:59393  
 ED Entered STN: 28 Apr 2005  
 AB Various C-centered radicals can efficiently be generated through thermal C-O-bond homolysis of alkoxyamines. This method is used to perform environmentally benign radical cyclization and intermol. addition reactions. These alkoxyamine isomerizations and intermol. carboaminoxylations are mediated by the persistent radical effect (PRE). In the paper, the effect of the variation of the alkoxyamine structure-in particular steric effects in the nitroxide moiety-on the outcome of the PRE mediated radical reactions will be discussed. Fourteen different nitroxides were used in the studies. It will be shown that reaction times can be shortened about 100 times upon careful tuning of the alkoxyamine structure. Activation energies for the C-O-bond homolysis of the various alkoxyamines are provided. The kinetic data are used to explain the reaction outcome of the PRE-mediated processes.  
 IT 270901-55-8P  
 (tin-free radical alkoxyamine addition and isomerization reactions by using the persistent radical effect)  
 RN 270901-55-8 HCAPLUS  
 CN 6-Heptenoic acid, 2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]-, 1,1-dimethylethyl ester (CA INDEX NAME)



CC 22-4 (Physical Organic Chemistry)  
 IT 270901-55-8P 270901-57-0P 270901-58-1P  
 270901-83-2P 270901-84-3P 853886-27-8P  
 853886-33-6P 853886-36-9P 853886-37-0P 853886-40-5P  
 853886-44-9P 853886-48-3P 853886-51-8P  
 853886-55-2P 853886-56-3P 853886-57-4P  
 853886-58-5P 853886-59-6P 853886-60-9P  
 853886-65-4P 853886-66-5P 853886-67-6P  
 853886-68-7P 853886-69-8P 853886-70-1P  
 853886-77-8P 853886-79-0P 853886-81-4P  
 853886-82-5P

(tin-free radical alkoxyamine addition and isomerization reactions by using the persistent radical effect)

IT 853886-26-7P

(tin-free radical alkoxyamine addition and isomerization reactions by using the persistent radical effect)

IT 270901-60-5P 270901-70-7P 270901-72-9P 270901-89-8P  
 270901-90-1P 270901-93-4P 270901-95-6P 675879-82-0P  
 853886-20-1P 853886-21-2P 853886-22-3P 853886-23-4P  
 853886-24-5P 853886-25-6P 853886-28-9P 853886-29-0P  
 853886-30-3P 853886-31-4P 853886-32-5P 853886-34-7P  
 853886-35-8P 853886-38-1P 853886-39-2P 853886-41-6P  
 853886-42-7P 853886-43-8P 853886-45-0P 853886-46-1P  
 853886-47-2P 853886-49-4P 853886-50-7P 853886-52-9P  
 853886-53-0P 853886-54-1P 853886-61-0P 853886-62-1P  
 853886-63-2P 853886-64-3P 853886-71-2P 853886-72-3P  
 853886-73-4P 853886-74-5P 853886-75-6P 853886-76-7P  
 853886-78-9P 853886-80-3P 853886-83-6P 853886-84-7P  
 853886-85-8P 853886-86-9P 853904-90-2P

(tin-free radical alkoxyamine addition and isomerization reactions by using the persistent radical effect)

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 9 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:686753 HCAPLUS Full-text

DOCUMENT NUMBER: 142:135004

TITLE: A novel method for the synthesis of alkoxyamine initiators for nitroxide-mediated radical polymerization using Mn(OAc)<sub>3</sub> as electron-transfer reagent

AUTHOR(S): Krause, T.; Habicher, W. D.; Messerschmidt, M.; Voit, B. I.

CORPORATE SOURCE: Institut fuer Organische Chemie, Technische Universitaet Dresden, Dresden, 01062, Germany

SOURCE: Designed Monomers and Polymers (2004), 7(4), 391-397

CODEN: DMPOF3; ISSN: 1385-772X

PUBLISHER: VSP BV

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 23 Aug 2004

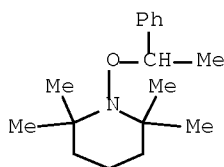
AB O-substituted hydroxylamines which are known to initiate and promote nitroxide-mediated radical polymerization were synthesized in high yield by a novel and facile synthetic approach. Using the favorable Mn(OAc)<sub>3</sub> as electron transfer agent in the in situ generation of benzylic radicals and their trapping by nitroxide radicals provides a new powerful and more economic way to the desired alkoxyamine initiators for this controlled, living radical polymerization. TEMPO, TIPNO and the protected tris-hydroxy derivative of TIPNO were used to synthesize the appropriate alkoxyamines.

IT 154554-67-3P

(synthesis of alkoxyamine initiators for nitroxide-mediated radical polymerization using Mn(OAc)<sub>3</sub> as electron-transfer reagent)

RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



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CC 35-3 (Chemistry of Synthetic High Polymers)
IT Polymerization catalysts
 (synthesis of alkoxyamine initiators for
 nitroxide-mediated radical polymerization using Mn(OAc)3 as
 electron-transfer reagent)
IT 993-02-2, Manganese triacetate
 (synthesis of alkoxyamine initiators for
 nitroxide-mediated radical polymerization using Mn(OAc)3 as
 electron-transfer reagent)
IT 154554-67-3P 330938-14-2P 824430-24-2P 824430-25-3P
 (synthesis of alkoxyamine initiators for
 nitroxide-mediated radical polymerization using Mn(OAc)3 as
 electron-transfer reagent)
IT 100-42-5, reactions 2564-83-2 2628-16-2 61015-94-9 95418-58-9
 270901-77-4
 (synthesis of alkoxyamine initiators for
 nitroxide-mediated radical polymerization using Mn(OAc)3 as
 electron-transfer reagent)
REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

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L68 ANSWER 10 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2003:1007898 HCAPLUS Full-text  
DOCUMENT NUMBER: 140:60153  
TITLE: One-pot process for preparation of  
hydroxy-functionalized alkozyamine  
initiator and its use  
INVENTOR(S): Detrembleur, Christophe; Gross, Thomas; Meyer,  
Rolf-Volker  
PATENT ASSIGNEE(S): Bayer Aktiengesellschaft, Germany  
SOURCE: U.S. Pat. Appl. Publ., 12 pp.  
CODEN: USXXCO  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.                                                                                                   | KIND | DATE     | APPLICATION NO. | DATE       |
|--------------------------------------------------------------------------------------------------------------|------|----------|-----------------|------------|
| US 2003236368                                                                                                | A1   | 20031225 | US 2003-464927  | 20030619   |
| US 6686424                                                                                                   | B2   | 20040203 |                 |            |
| EP 1375457                                                                                                   | A1   | 20040102 | EP 2002-13949   | 20020625   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,<br>PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR |      |          |                 |            |
| CA 2432964                                                                                                   | A1   | 20031225 | CA 2003-2432964 | 20030620   |
| JP 2004107320                                                                                                | A    | 20040408 | JP 2003-181155  | 20030625   |
| PRIORITY APPLN. INFO.:                                                                                       |      |          | EP 2002-13949   | A 20020625 |

OTHER SOURCE(S): MARPAT 140:60153

ED Entered STN: 28 Dec 2003

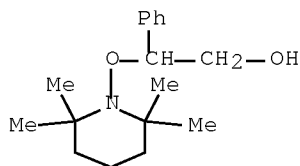
AB Functional alkoxyamines of the general formula  $\text{HOC(R1)HCR2R3ONR4R5}$  [R1-3 = H, C1-20 (cyclo)alkyl, C6-24 aryl, halogen, cyano, C1-20 (cyclo)alkyl ester, C1-20(cyclo) alkylamido, C6-24 aryl ester, C6-24 arylamido group; R4-5 = optionally substituted C1-18 alk(e)nyl or alkynyl, C3-12 cycloalkyl, heterocycloalkyl, C6-24 aryl, etc., R4 and R5 together can make a ring, and optionally with N, O or S] are prepared by: (1) reacting an oxidizing agent with a sterically hindered secondary amine to produce an aqueous phase and a nitroxyl radical, and (2) removing the aqueous phase and adding to the nitroxyl radical one or more vinyl monomer(s) conforming to a formula and a system which produces free radicals. Also disclosed is a controlled radical process for polymerizing monomers using the functional alkoxyamine. Thus, a typical alkoxyamine such as 1-phenyl-1-(2',2',6',6'-tetramethyl-1'-piperidinyloxy)-2-hydroxyethane could be prepared from the reaction of Oxone with 2,2,6,6-tetramethylpiperidine, then with styrene and  $\text{H}_2\text{O}_2$ .

IT 161776-41-6P

(one-pot process for preparation of functionalized alkoxyamine initiator and its use)

RN 161776-41-6 HCAPLUS

CN Benzeneethanol,  $\beta$ -[(2,2,6,6-tetramethyl-1-piperidinyloxy)]- (CA INDEX NAME)



IC ICM C08F002-00

ICS C08F004-00; C07D211-20; C07D223-08; C07D207-46; C07C255-62; C07C239-12

INCL 526220000; 540604000; 546248000; 548542000; 548950000; 558452000; 564300000; 564301000

CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts

(radical; one-pot process for preparation of functionalized alkoxyamine initiator and its use)

IT 161776-41-6P 637334-58-8P

(one-pot process for preparation of functionalized alkoxyamine initiator and its use)

IT 9003-53-6P, Polystyrene 9003-54-7P, Acrylonitrile-styrene copolymer 126639-07-4P, Acrylonitrile-methyl methacrylate-styrene block copolymer

(one-pot process for preparation of functionalized alkoxyamine initiator and its use)

IT 2564-83-2P, 2,2,6,6-Tetramethylpiperidine-N-oxide

(one-pot process for preparation of functionalized alkoxyamine initiator and its use)

IT 100-42-5, Styrene, reactions 768-66-1, 2,2,6,6-Tetramethylpiperidine 826-36-8, 2,2,6,6-Tetramethyl-4-piperidone

(one-pot process for preparation of functionalized alkoxyamine initiator and its use)

IT 7722-84-1, Hydrogen peroxide, reactions

(one-pot process for preparation of functionalized alkoxyamine initiator and its use)

- IT 79-21-0, Peracetic acid 37222-66-5, Oxone  
(oxidizing agent; one-pot process for preparation of functionalized alkoxyamine initiator and its use)
- IT 7782-63-0, Iron sulfate (FeSO<sub>4</sub>) heptahydrate  
(reducing agent for hydrogen peroxide; one-pot process for preparation of functionalized alkoxyamine initiator and its use)

L68 ANSWER 11 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:961305 HCAPLUS Full-text

DOCUMENT NUMBER: 140:146562

TITLE: Hydroxy- and Silyloxy-Substituted TEMPO  
Derivatives for the Living Free-Radical  
Polymerization of Styrene and n-Butyl Acrylate:  
Synthesis, Kinetics, and Mechanistic Studies

AUTHOR(S): Knoop, Christoph Alexander; Studer, Armido  
CORPORATE SOURCE: Department of Chemistry, Philipps-University  
Marburg, Marburg, 35032, Germany

SOURCE: Journal of the American Chemical Society (2003),  
125(52), 16327-16333

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 10 Dec 2003

AB The synthesis of new 2,2,6,6-tetramethylpiperidin-1-oxyl (TEMPO) styryl derivs. as mediators for the living free-radical polymerization is described. Two of the  $\alpha$ -Me groups at the 2- and 6-position of the parent TEMPO styryl alkoxyamine have been replaced by hydroxymethyl and silyloxymethyl groups. To further increase the steric hindrance around the alkoxyamine oxygen atom, the remaining two Me groups have been substituted with larger Et groups. Styrene polymns. using hydroxy-substituted TEMPO derivs. are fast, but are not well-controlled. As previously shown for other OH-substituted alkoxyamines, intramol. H-bonding leads to an acceleration of the C-O bond homolysis and, hence, to an acceleration of the polymerization process. However, the OH groups also increase the alkoxyamine decomposition rate constant. The kinetics of the C-O bond homolysis have been determined using EPR spectroscopy. Decomposition studies have been conducted with the aid of <sup>1</sup>H NMR spectroscopy. In contrast to the OH-substituted alkoxyamines, highly hindered silyloxy-substituted TEMPO alkoxyamines turned out to be excellent mediator/initiators for the controlled styrene polymerization. Polystyrene with Mn of up to 80,000 g/mol and narrow polydispersities (PDI) has been prepared using the new alkoxyamines. Reactions have been conducted at 105°; however, even at 90° controlled but slow polymns. can be achieved. Furthermore, and more importantly, poly(Bu acrylates) with narrow PDIs (<1.15) have been prepared at 105° with the new alkoxyamines. Controlled acrylate polymerization can be conducted at temps. as low as 90°. The silylated alkoxyamines presented belong to the most efficient initiator/mediators for the controlled acrylate polymerization known to date. The effect of the addition of free nitroxide on the acrylate polymerization is discussed. Moreover, the synthesis of diblock copolymers with narrow PDIs is described.

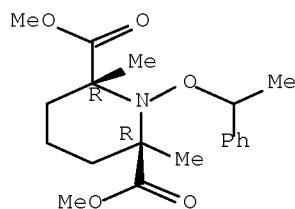
IT 651351-97-2F

(synthesis, kinetics, and mechanistic studies of hydroxy- and silyloxy-substituted tetramethylpiperidinoxyl derivs. for living free-radical polymerization of styrene and n-Bu acrylate)

RN 651351-97-2 HCAPLUS

CN 2,6-Piperidinedicarboxylic acid, 2,6-dimethyl-1-(1-phenylethoxy)-, dimethyl ester, (2R,6R)-rel- (9CI) (CA INDEX NAME)

Relative stereochemistry.



CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST hydroxy silyloxy substituted tetramethylpiperidinoxyl deriv styrene  
 living radical polymn; butyl acrylate living radical polymn hydroxy  
 silyloxy tetramethylpiperidinoxyl deriv; kinetics living radical  
 polymn hydroxy silyloxy tetramethylpiperidinoxyl deriv  
 initiator  
 IT Polymerization catalysts  
 (living, radical; synthesis, kinetics, and mechanistic studies of  
 hydroxy- and silyloxy-substituted tetramethylpiperidinoxyl derivs.  
 for living free-radical polymerization of styrene and n-Bu acrylate)  
 IT 651351-97-2P 651351-99-4P 651352-01-1P  
 651352-03-3P 651352-05-5P 651352-07-7P  
 651352-09-9P 651352-11-3P  
 (synthesis, kinetics, and mechanistic studies of hydroxy- and  
 silyloxy-substituted tetramethylpiperidinoxyl derivs. for living  
 free-radical polymerization of styrene and n-Bu acrylate)  
 IT 651352-12-4P 651352-13-5P 651352-15-7P  
 651352-17-9P 651352-19-1P 651352-21-5P  
 651352-25-9P  
 (synthesis, kinetics, and mechanistic studies of hydroxy- and  
 silyloxy-substituted tetramethylpiperidinoxyl derivs. for living  
 free-radical polymerization of styrene and n-Bu acrylate)  
 REFERENCE COUNT: 52 THERE ARE 52 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L68 ANSWER 12 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2003:719523 HCAPLUS Full-text  
 DOCUMENT NUMBER: 139:246324  
 TITLE: Open-chain alkoxyamines and their corresponding  
 nitroxides for controlled low-temperature radical  
 polymerization  
 INVENTOR(S): Hintermann, Tobias; Nesvadba, Peter; Kramer,  
 Andreas; Fink, Jochen  
 PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.  
 SOURCE: PCT Int. Appl., 59 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.    | KIND | DATE     | APPLICATION NO. | DATE     |
|---------------|------|----------|-----------------|----------|
| WO 2003074572 | A1   | 20030912 | WO 2003-EP1895  | 20030225 |

10/519,030

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,  
 CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,  
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,  
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
 NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ,  
 TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,  
 BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,  
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 SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
 SN, TD, TG

|               |    |          |                 |          |
|---------------|----|----------|-----------------|----------|
| CA 2477728    | A1 | 20030912 | CA 2003-2477728 | 20030225 |
| AU 2003212272 | A1 | 20030916 | AU 2003-212272  | 20030225 |
| EP 1481012    | A1 | 20041201 | EP 2003-708135  | 20030225 |
| EP 1481012    | B1 | 20060517 |                 |          |

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

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|----------------|----|----------|----------------|----------|
| JP 2005519121  | T  | 20050630 | JP 2003-573037 | 20030225 |
| CN 1639201     | A  | 20050713 | CN 2003-805021 | 20030225 |
| AT 326487      | T  | 20060615 | AT 2003-708135 | 20030225 |
| ES 2263957     | T3 | 20061216 | ES 2003-708135 | 20030225 |
| MX 2004PA08321 | A  | 20041126 | MX 2004-PA8321 | 20040827 |
| US 2005124814  | A1 | 20050609 | US 2004-506700 | 20040902 |
| US 7297819     | B2 | 20071120 |                |          |

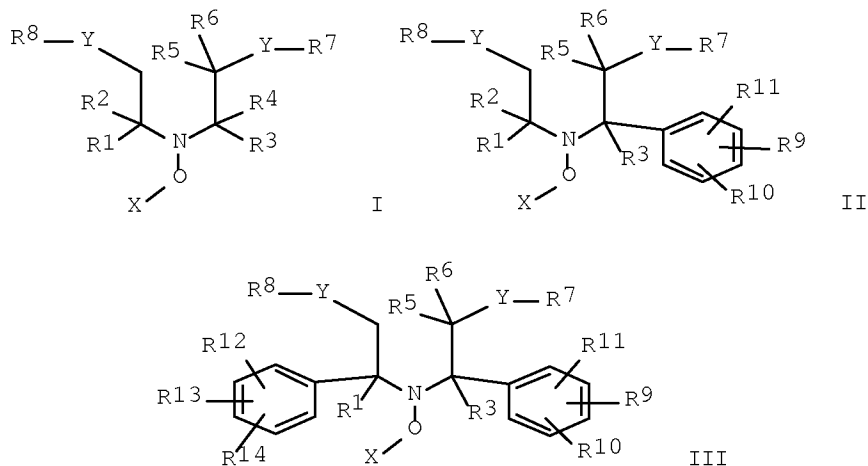
PRIORITY APPLN. INFO.: EP 2002-405168 A 20020305

WO 2003-EP1895 W 20030225

OTHER SOURCE(S): MARPAT 139:246324

ED Entered STN: 14 Sep 2003

GI

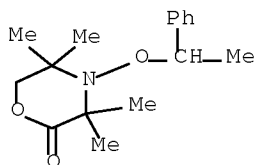


AB Alkoxyamines I, II, and III [Y = O or NR; R = H or C1-18 alkyl; R7 and(or) R8 with R and N to which they are bonded form 5-6-membered ring; R1-3 = organic; R4 = C2-12 alkyl; R5, R6 = H, C1-18 alkyl, C2-18 alkenyl, benzyl, C5-12 cycloalkyl, or Ph; R7, R8 = H or organic; R9-14 = H, OH, SH, or organic; X = organic] are useful for enhancing the polymerization rates and monomer-to-polymer conversions of ethylenically unsatd. compds. at  $\leq 100^\circ$ . The



intermediate N-oxyl derivs., a composition of the N-oxyl derivs. with ethylenically unsatd. monomers and a free radical initiator X•, as well as a process and their use for polymerization are also subjects of the present invention. I (R1, R2 = Me, R3, R4 = Et, R5-8 = H, X = PhCHMe) was manufactured by adding 13.9 g 3,3-diethyl-5,5-dimethylmorpholin-2-one N-oxyl to THF containing LiAlH4 at 0-10° and heating 5 h at reflux.

IT 332380-44-6P, 3,3,5,5-Tetramethyl-4-(1-phenylethoxy)morpholin-2-one  
(initiator model compound precursor; open-chain hindered alkoxyamines and their corresponding nitroxides for controlled low-temperature radical polymerization)  
RN 332380-44-6 HCAPLUS  
CN 2-Morpholinone, 3,3,5,5-tetramethyl-4-(1-phenylethoxy)- (CA INDEX NAME)



IC ICM C08F004-00  
ICS C07C239-20; C07D265-32; C07D265-34  
CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 23, 25  
ST open chain hindered alkoxyamine initiator unsatd monomer radical polymn; ethylhydroxydimethylethyl phenylethoxyaminobutanol manuf initiator unsatd monomer radical polymn  
IT 332380-44-6P, 3,3,5,5-Tetramethyl-4-(1-phenylethoxy)morpholin-2-one  
(initiator model compound precursor; open-chain hindered alkoxyamines and their corresponding nitroxides for controlled low-temperature radical polymerization)  
IT 213924-52-8P, Sodium 2-(2-hydroxy-1,1-dimethylethylamino)-2-phenylpropionate 264279-70-1P, 3,3-Diethyl-5,5-dimethyl-4-(1-phenylethoxy)morpholin-2-one 597555-36-7P, 3,3-Diisopropyl-5,5-dimethyl-4-(1-phenylethoxy)morpholin-2-one 597555-40-3P, 3-Pentyl-3,5,5-trimethyl-4-(1-phenylethoxy)morpholin-2-one 597555-44-7P, 2,2-Dimethyl-1-(1-phenylethoxy)-1-aza-4-oxaspiro[5.5]undecan-5-one 597555-45-8P, 2,2-Dimethyl-1-(1-phenylethoxy)-1-aza-4-oxaspiro[5.6]dodecan-5-one 597555-47-0P, 3-Phenyl-3,5,5-trimethyl-4-(1-phenylethoxy)morpholin-2-one 597555-49-2P, 5,5-Dimethyl-3-ethyl-3-phenyl-4-(1-phenylethoxy)morpholin-2-one 597555-52-7P, 3-(4-Chlorophenyl)-3,5,5-trimethyl-4-(1-phenylethoxy)morpholin-2-one  
(precursor; open-chain hindered alkoxyamines and their corresponding nitroxides for controlled low-temperature radical polymerization)  
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

10/519,030

ACCESSION NUMBER: 2003:434535 HCAPLUS Full-text  
DOCUMENT NUMBER: 139:22821  
TITLE: Process for the synthesis of hindered amine ethers  
from secondary amino oxides  
INVENTOR(S): Frey, Markus; Rast, Valerie  
PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.  
SOURCE: PCT Int. Appl., 56 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | KIND | DATE     | APPLICATION NO. | DATE       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-----------------|------------|
| WO 2003045919                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A2   | 20030605 | WO 2002-EP12957 | 20021119   |
| WO 2003045919                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A3   | 20040429 |                 |            |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,<br>CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,<br>GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,<br>LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,<br>NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL,<br>TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW<br>RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ,<br>BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,<br>EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR,<br>BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG |      |          |                 |            |
| CA 2464107                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A1   | 20030605 | CA 2002-2464107 | 20021119   |
| AU 2002352057                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A1   | 20030610 | AU 2002-352057  | 20021119   |
| EP 1463717                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A2   | 20041006 | EP 2002-787731  | 20021119   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,<br>PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |          |                 |            |
| BR 2002014429                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A    | 20041103 | BR 2002-14429   | 20021119   |
| CN 1592740                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A    | 20050309 | CN 2002-823421  | 20021119   |
| JP 2005516905                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | T    | 20050609 | JP 2003-547371  | 20021119   |
| MX 2004PA04694                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A    | 20040819 | MX 2004-PA4694  | 20040518   |
| US 2005104042                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A1   | 20050519 | US 2004-496773  | 20040524   |
| PRIORITY APPLN. INFO.:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |      |          | EP 2001-811143  | A 20011126 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |          | WO 2002-EP12957 | W 20021119 |

OTHER SOURCE(S): MARPAT 139:22821

ED Entered STN: 06 Jun 2003

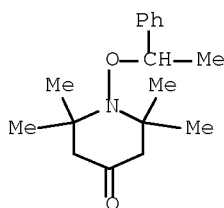
AB Amine ethers of sterically hindered amines are obtained in good yield from the corresponding N-oxyl hindered amine precursor by reaction with a hydrocarbon in the presence of an organic hydroperoxide and an iodide. The products of present process find utility as polymerization regulators and/or light stabilizers for organic material. Thus, adding tert-Bu hydroperoxide (I; 70% aqueous solution) 6.2 to a stirred mixture of 2,2,6,6-tetramethylpiperidine-N-oxide (TEMPO) 5, ethylbenzene 34 and tetrabutylammonium iodide 0.12 g within 30 min, heating at 60° for 25 min until all of the TEMPO has reacted, cooling to 25°, stirring with a 10% aqueous solution of Na2SO3 until the disappearance of excess I, separating the aqueous phase, washing and drying over MgSO4 gave 1-(1-phenylethoxy)-2,2,6,6-tetramethylpiperidine.

IT 122586-81-6P

(process for synthesis of hindered amine ethers from secondary amino oxides)

RN 122586-81-6 HCAPLUS

CN 4-Piperidinone, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



IC ICM C07D211-94  
ICS C07D401-14; C07D493-10; C07C239-20; C09K015-20; C08K005-3435;  
C08K005-3492; C08F002-38

CC 37-2 (Plastics Manufacture and Processing)

IT Oxidation catalysts  
(onium salts; process for synthesis of hindered amine ethers from  
secondary amino oxides)

IT 117174-66-0P 122586-81-6P 122587-12-6P  
154554-67-3P, 1-(1-Phenylethoxy)-2,2,6,6-tetramethylpiperidine  
243972-05-6P 244021-01-0P 264224-73-9P  
335201-37-1P 378245-16-0P 378245-17-1P  
378245-30-8P 434898-80-3P 437744-23-5P  
437748-41-9P 538343-67-8P 538343-74-7P 538343-76-9P  
538343-80-5P  
(process for synthesis of hindered amine ethers from secondary  
amino oxides)

L68 ANSWER 14 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2003:397228 HCAPLUS Full-text  
DOCUMENT NUMBER: 139:117736  
TITLE: Synthesis of reactive poly(vinyl oxazolones) via  
nitroxide-mediated "living" free radical  
polymerization  
AUTHOR(S): Tully, David C.; Roberts, Michael J.;  
Geierstanger, Bernhard H.; Grubbs, Robert B.  
CORPORATE SOURCE: Genomics Institute, Novartis Research Foundation,  
San Diego, CA, 92121, USA  
SOURCE: Macromolecules (2003), 36(12), 4302-4308  
CODEN: MAMOBX; ISSN: 0024-9297  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

ED Entered STN: 25 May 2003

AB Low-polydispersity poly(vinyl oxazalone) has been prepared using nitroxide-mediated living free radical polymerization. Bulk homopolymn. of 2-vinyl-4,4-dimethyl-5-oxazalone (VDMO) in the presence of the  $\alpha$ -hydrido alkoxyamine initiator, N-(1,1-dimethylethyl)- $\alpha$ -(1-methylethyl)-N-(1-phenylethoxy)-benzenemethanamine, and the corresponding nitroxide proceeds to high conversion with polydispersities of less than 1.10. Accurate mol. weight control and low polydispersities (.apprx.1.04-1.10) were obtained on statistical copolymn. with styrene. Well-defined reactive statistical copolymers with polydispersities ranging from 1.05 to 1.30 were also prepared by copolymn. of oxazalone-functional monomers with acrylates, acrylamides, and N-vinylamides. Reactive block copolymers were prepared by polymerization of VDMO from poly(Bu acrylate) starting blocks as well as by polymerization of styrene from poly(VDMO) starting blocks. New polymers were prepared from

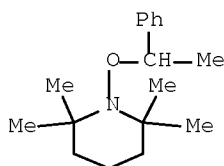
VDMO-containing polymers and copolymers by nucleophilic ring-opening of the pendant oxazolone rings with amines.

IT 154554-67-3

(synthesis of reactive poly(vinyl oxazolones) via nitroxide-mediated "living" free radical polymerization)

RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT 2564-83-2, TEMPO 61015-94-9 154554-67-3 227000-59-1

(synthesis of reactive poly(vinyl oxazolones) via nitroxide-mediated "living" free radical polymerization)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 15 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:282982 HCAPLUS Full-text

DOCUMENT NUMBER: 139:22546

TITLE: New Seven- and Eight-Membered Cyclic Alkoxyamines for the Living Free Radical Polymerization

AUTHOR(S): Schulte, Tobias; Studer, Armido

CORPORATE SOURCE: Fachbereich Chemie der Universitaet Marburg, Marburg, D-35032, Germany

SOURCE: Macromolecules (2003), 36(9), 3078-3084

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 13 Apr 2003

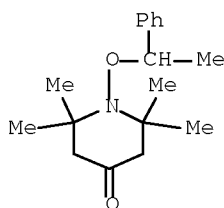
AB A straightforward synthesis of new seven- and eight-membered cyclic alkoxyamines from the corresponding lower homologous keto-alkoxyamines via ring-enlargement using TMS-diazomethane is described. The use of these ring-enlarged cyclic alkoxyamines as regulators/ initiators for the radical polymerization of styrene and Bu acrylate is presented. Efficient controlled and living styrene polymerization (mol. weight of up to 40 000) can be obtained using the seven- and eight-membered alkoxyamine initiators. The influence of the ring-enlargement on the quality of the polymerization process (polymerization time, livingness, PDI) is discussed. The rate constant of the C-O bond cleavage of these new alkoxyamines was measured. In addition, the thermal decomposition of the alkoxyamines was studied. Furthermore, EPR data of the corresponding new nitroxides are presented.

IT 122586-81-6P

(new seven- and eight-membered cyclic alkoxyamines catalysts for living free radical polymerization)

RN 122586-81-6 HCAPLUS

CN 4-Piperidinone, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

ST prepn seven eight membered cyclic alkoxyamine radical polymn  
catalyst; alkoxyamine living free radical polymn  
catalyst prepn

IT Activation energy  
(homolysis; new seven- and eight-membered cyclic alkoxyamines  
catalysts for living free radical polymerization)

IT Polymerization  
Polymerization catalysts  
(living, radical; new seven- and eight-membered cyclic alkoxyamines  
catalysts for living free radical polymerization)

IT Hyperfine coupling  
Reduction  
Ring enlargement  
Ring enlargement catalysts  
(new seven- and eight-membered cyclic alkoxyamines  
catalysts for living free radical polymerization)

IT Decomposition kinetics  
(of catalysts; new seven- and eight-membered cyclic  
alkoxyamines catalysts for living free radical polymerization)

IT 122586-81-6P 538376-93-1P 538376-94-2P 538376-95-3P  
(new seven- and eight-membered cyclic alkoxyamines  
catalysts for living free radical polymerization)

IT 132416-36-5P 538376-96-4P 538376-97-5P 538376-98-6P  
(new seven- and eight-membered cyclic alkoxyamines  
catalysts for living free radical polymerization)

IT 2226-96-2P 2896-70-0P 538376-99-7P 538377-00-3P 538377-01-4P  
538377-02-5P 538377-03-6P 538377-04-7P  
(new seven- and eight-membered cyclic alkoxyamines  
catalysts for living free radical polymerization)

IT 9003-49-0P, Poly(butyl acrylate) 9003-53-6P, Polystyrene  
(new seven- and eight-membered cyclic alkoxyamines  
catalysts for living free radical polymerization)

IT 585-71-7, (1-Bromoethyl)benzene  
(preparation of initiator; new seven- and eight-membered  
cyclic alkoxyamines catalysts for living free radical  
polymerization)

IT 109-63-7, Boron trifluoride etherate  
(ring enlargement; new seven- and eight-membered cyclic  
alkoxyamines catalysts for living free radical polymerization)

IT 18107-18-1, (Trimethylsilyl)diazomethane  
(ring enlargement; new seven- and eight-membered cyclic  
alkoxyamines catalysts for living free radical polymerization)

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 16 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:148870 HCAPLUS Full-text

DOCUMENT NUMBER: 139:22531

TITLE: A convenient synthesis of functionalized alkoxyamines as initiators for living free radical polymerization

AUTHOR(S): Sugimoto, Naoya; Narumi, Atsushi; Satoh, Toshifumi; Kaga, Harumi; Kakuchi, Toyoji

CORPORATE SOURCE: Graduate School of Engineering, Division of Molecular Chemistry, Hokkaido University, Sapporo, 060-8628, Japan

SOURCE: Polymer Bulletin (Berlin, Germany) (2003), 49(5), 337-340

CODEN: POBUDR; ISSN: 0170-0839

PUBLISHER: Springer-Verlag

DOCUMENT TYPE: Journal

LANGUAGE: English

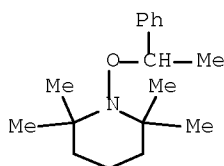
ED Entered STN: 27 Feb 2003

AB 2,2,6,6-Tetramethylpiperidine-1-oxyl (TEMPO) was reacted with ethylbenzene (1a), 1-bromo-4-ethylbenzene (1b), and 4-ethylphenyl acetate (1c), resp., using tert-BuOOWCo(OAc)·4H<sub>2</sub>O in acetonitrile at room temperature. The reactions produced the resp. TEMPO-adducts (2a, 2b, and 2c) in the yields of 37, 44, and 45%, which were based on TEMPO. Similarly, TEMPO was reacted with 4-ethylphenyl 2,3,6,2',3',4',6'-hepta-O-acetyl-β-D-cellobioside (1d) to afford the glycoconjugated TEMPO-adduct (2d) in 45% yield, which was based on 1d. These results indicated that the reaction has the potential to become an easy and also safe strategy, which provided various functionalized alkoxyamines.

IT 154554-67-3P  
(synthesis of functionalized alkoxyamines as initiators for living free radical polymerization)

RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

ST alkoxyamine initiator living radical polymn

IT 154554-67-3P 178625-97-3P 213699-59-3P  
538373-53-4P

(synthesis of functionalized alkoxyamines as initiators for living free radical polymerization)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 17 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:140776 HCAPLUS Full-text

DOCUMENT NUMBER: 139:36837

TITLE: Nitroxide-mediated radical polymerization of

styrene in miniemulsion: model studies of alkoxyamine-initiated systems

AUTHOR(S): Ma, John W.; Smith, Jodi A.; McAuley, Kim B.; Cunningham, Michael F.; Keoshkerian, Barkev; Georges, Michael K.

CORPORATE SOURCE: Department of Chemical Engineering, Queen's University, Kingston, ON, K7L 3N6, Can.

SOURCE: Chemical Engineering Science (2003), 58(7), 1163-1176  
CODEN: CESCAC; ISSN: 0009-2509

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

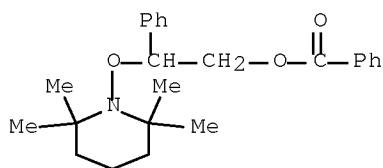
ED Entered STN: 25 Feb 2003

AB A math. model was developed to describe the behavior of the nitroxide-mediated miniemulsion polymerization (NMMP) of styrene initiated by alkoxyamine initiators. The model includes mechanisms describing reactions in the aqueous and organic phases, particle nucleation, the entry and exit of oligomeric radicals, and the partitioning of nitroxide and styrene between the aqueous and organic phases. The influence of nitroxide partitioning on the polymerization kinetics was examined by modeling systems initiated by the alkoxyamines BST and hydroxyl-BST; BST and hydroxyl-BST are benzoylstyryl radicals terminated by the nitroxides TEMPO and 4-hydroxyl-TEMPO, resp. Predicted monomer conversions, number average mol. wts. and polydispersities were in agreement with exptl. measured values. Simulations and math. anal. showed that the rate of styrene NMMP is not strongly influenced by the partitioning properties of TEMPO and 4-hydroxyl-TEMPO because of the complex interaction between reaction equilibrium, phase equilibrium, termination and thermal initiation. However, in the absence of styrene thermal initiation, nitroxide partitioning had a significant influence on the polymerization kinetics. The model was also used to make quant. ests. of: the population of active and dormant polymer radicals derived from both alkoxyamine initiators and thermal initiation; the population of dead polymer chains; and the number mol. weight distributions of living and dead polymer chains.

IT 81913-53-3  
(polymerization catalyst; math. modeling of nitroxide-mediated radical polymerization of styrene in miniemulsion initiated by alkoxyamine initiators)

RN 81913-53-3 HCAPLUS

CN Benzeneethanol,  $\beta$ -[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]-, 1-benzoate (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

ST math modeling living radical polymn styrene; simulation nitroxide mediated polymn styrene miniemulsion; alkoxyamine initiator living radical polymn styrene miniemulsion

IT Polymerization kinetics  
(living, radical; math. modeling of nitroxide-mediated living

radical polymerization of styrene in miniemulsion initiated by alkoxyamine initiators)

- IT Polymerization  
(living, radical; math. modeling of nitroxide-mediated radical polymerization of styrene in miniemulsion initiated by alkoxyamine initiators)
- IT Simulation and Modeling  
(math. modeling of nitroxide-mediated living radical polymerization of styrene in miniemulsion initiated by alkoxyamine initiators)
- IT Molecular weight  
Polydispersity  
(math. modeling of nitroxide-mediated radical polymerization of styrene in miniemulsion initiated by alkoxyamine initiators  
)
- IT 100-42-5, Styrene, reactions  
(math. modeling of nitroxide-mediated radical polymerization of styrene in miniemulsion initiated by alkoxyamine initiators  
)
- IT 9003-53-6P, Polystyrene  
(math. modeling of nitroxide-mediated radical polymerization of styrene in miniemulsion initiated by alkoxyamine initiators  
)
- IT 81913-53-3 470689-10-2  
(polymerization catalyst; math. modeling of nitroxide-mediated radical polymerization of styrene in miniemulsion initiated by alkoxyamine initiators)

REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 18 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:928481 HCAPLUS Full-text

DOCUMENT NUMBER: 138:137679

TITLE: n-Butyl acrylate polymerization mediated by a PROXYL nitroxide

AUTHOR(S): Cameron, Neil R.; Reid, Alistair J.

CORPORATE SOURCE: Department of Chemistry, University of Durham, Durham, DH1 3LE, UK

SOURCE: Macromolecules (2002), 35(27), 9890-9895  
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 08 Dec 2002

AB N-Bu acrylate has been polymerized in the presence of an alkoxyamine initiator derived from the PROXYL nitroxide 2,2',5-trimethyl-5'-phenylpyrrolidinyl-1-oxyl. It was found that polymns. were rapid, reaching almost complete conversion within 2 h; in contrast, no conversion was observed when TEMPO was used as the mediator. The addition of a small amount of free nitroxide resulted in slower polymns. although an induction period, the length of which varied with excess nitroxide concentration, was observed. Size exclusion chromatog. indicated that polymerization control was poor; Mn initially increased rapidly and then much more slowly, and polydispersities were found to be broad and to increase with conversion. Quant. <sup>13</sup>C NMR spectroscopy revealed the resulting poly(Bu acrylate) to be branched. Despite the poor control, the PBA was able to act as a macroinitiator for the polymerization of styrene, yielding a block copolymer with a growth in Mn and a reduction of polydispersity with conversion. It is suggested that the polymerization of Bu



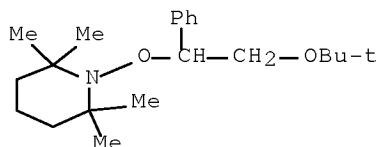
acrylate in the presence of the substituted PROXYL derivative is living but not controlled.

IT 185055-65-6

(Bu acrylate polymerization mediated by PROXYL nitroxide)

RN 185055-65-6 HCAPLUS

CN Piperidine, 1-[2-(1,1-dimethylethoxy)-1-phenylethoxy]-2,2,6,6-tetramethyl- (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT 62539-49-5 185055-65-6 328311-61-1

(Bu acrylate polymerization mediated by PROXYL nitroxide)

REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 19 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:886070 HCAPLUS Full-text

DOCUMENT NUMBER: 136:20022

TITLE: Process for the synthesis of amine ethers from N-oxylamines and hydrocarbons in the presence of hydroperoxides and copper catalysts.

INVENTOR(S): Hafner, Andreas; Kirner, Hans Juerg; Schwarzenbach, Franz; Van Der Schaaf, Paul Adriaan; Nesvadba, Peter

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 84 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.    | KIND                                                                                                                                                                                                                                                                                                                                               | DATE     | APPLICATION NO.  | DATE     |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|----------|
| WO 2001092228 | A2                                                                                                                                                                                                                                                                                                                                                 | 20011206 | WO 2001-EP5668   | 20010517 |
| WO 2001092228 | A3                                                                                                                                                                                                                                                                                                                                                 | 20020516 |                  |          |
| W:            | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW |          |                  |          |
| RW:           | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG                                                                                                                                                             |          |                  |          |
| TW 572896     | B                                                                                                                                                                                                                                                                                                                                                  | 20040121 | TW 2001-90110396 | 20010501 |
| CA 2407866    | A1                                                                                                                                                                                                                                                                                                                                                 | 20011206 | CA 2001-2407866  | 20010517 |
| EP 1284966    | A2                                                                                                                                                                                                                                                                                                                                                 | 20030226 | EP 2001-945152   | 20010517 |
| R:            | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR                                                                                                                                                                                                                                             |          |                  |          |

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|                        |    |          |                |             |
|------------------------|----|----------|----------------|-------------|
| JP 2003535080          | T  | 20031125 | JP 2002-500843 | 20010517    |
| RU 2273634             | C2 | 20060410 | RU 2002-133210 | 20010517    |
| US 2003171461          | A1 | 20030911 | US 2002-296107 | 20021122    |
| US 6900328             | B2 | 20050531 |                |             |
| US 2005043552          | A1 | 20050224 | US 2004-919776 | 20040817    |
| PRIORITY APPLN. INFO.: |    |          | EP 2000-810461 | A 20000526  |
|                        |    |          | WO 2001-EP5668 | W 20010517  |
|                        |    |          | US 2002-296107 | A1 20021122 |

OTHER SOURCE(S): CASREACT 136:20022; MARPAT 136:20022

ED Entered STN: 07 Dec 2001

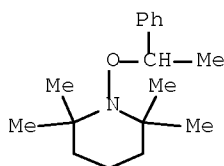
AB [G1G2T2CN(T1)O]aE1 [a = 1, 2; when a = 1, E = alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, (unsatd.) aliphatic bicyclic or tricyclic hydrocarbyl, aralkyl, etc.; when a = 2, E = alkylene, cycloalkylene, cycloalkenylene, alkenylene, phenylalkyl, etc.; T1 = (substituted) tertiary alkyl, Ph, cycloalkyl, heterocyclyl, etc.; T2 = H, halo, NO2, cyano, organic radical; T1T2 = organic linking group; G1, G2 = H, halo, NO2, cyano, aminocarbonyl, etc.], were prepared by reaction of G1G2T2CN(T1)O· with EH in the presence of an organic hydroperoxide and catalytic Cu or Cu compds. Thus, 1-oxyl-2,2,6,6-tetramethyl-4-propoxypiperidine, ethylbenzene, tert-Bu hydroperoxide in decane, and CuCl2 in EtOH were stirred at 60° for 60 min. to give 97% 1-(1-phenethyloxy)-2,2,6,6-tetramethyl-4-propoxypiperidine.

IT 154554-67-3P

(process for the synthesis of amine ethers from N-oxylamines and hydrocarbons in the presence of hydroperoxides and copper catalysts)

RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



IC ICM C07D211-94

ICS C07D405-12; C07D401-12; C08K005-3435; C08F004-00; C07D217-26; C07D209-44; C07D241-08

CC 27-16 (Heterocyclic Compounds (One Hetero Atom))  
Section cross-reference(s): 28, 35

ST amine ether prepn; oxylamine hydrocarbon coupling reaction  
hydroperoxide copper catalyst; piperidinoxyl hydrocarbon  
coupling reaction hydroperoxide copper catalyst;  
hydrocarbyloxyamine prepn heat light stabilizer; antioxidant  
hydrocarbyloxyamine prepn; polymn regulator hydrocarbyloxyamine prepn

IT Coupling reaction

(homolytic; process for the synthesis of amine ethers from N-oxylamines and hydrocarbons in the presence of hydroperoxides and copper catalysts)

IT Phase transfer catalysts

(process for the synthesis of amine ethers from N-oxylamines and hydrocarbons in the presence of hydroperoxides and copper catalysts)

- catalysts)
- IT 1643-19-2, Tetrabutylammonium bromide 7440-50-8, Copper, uses  
7440-50-8D, Copper, compds. 7447-39-4, Cupric chloride, uses  
7758-89-6, Cuprous chloride 7787-70-4, Cuprous bromide 35675-80-0,  
Trioctyl-methyl ammonium bromide  
(process for the synthesis of amine ethers from N-oxylamines and  
hydrocarbons in the presence of hydroperoxides and copper  
catalysts)
- IT 7803-49-8DP, Hydroxylamine, hydrocarbyloxyamines 154554-67-3P  
243972-01-2P 335201-37-1P 378245-15-9P  
378245-16-0P 378245-17-1P 378245-18-2P 378245-19-3P  
378245-20-6P 378245-21-7P 378245-22-8P 378245-23-9P  
378245-24-0P 378245-25-1P 378245-26-2P  
378245-27-3P 378245-28-4P 378245-29-5P  
378245-30-8P 378245-31-9P 378245-32-0P  
378245-33-1P 378245-34-2P  
(process for the synthesis of amine ethers from N-oxylamines and  
hydrocarbons in the presence of hydroperoxides and copper  
catalysts)
- IT 100-41-4, Ethylbenzene, reactions 101-41-7, Methyl phenylacetate  
103-45-7, 2-Phenethyl acetate 110-82-7, Cyclohexane, reactions  
110-83-8, Cyclohexene, reactions 110-87-2, 3,4-Dihydro-2H-pyran  
140-29-4, Benzyl cyanide 536-75-4, 4-Ethylpyridine 1746-13-0,  
Allyl phenyl ether 2226-96-2, 4-Hydroxy-2,2,6,6-tetramethylpiperidin-  
1-oxyl 2564-83-2, 2,2,6,6-Tetramethylpiperidin-1-oxyl 2930-02-1  
3282-30-2, Pivaloyl chloride 14691-89-5, 4-(Acetylamino)-2,2,6,6-  
tetramethylpiperidin-1-oxyl 18554-09-1 61746-17-6 71809-12-6  
104134-81-8 154186-10-4 194147-18-7 264279-93-8  
(process for the synthesis of amine ethers from N-oxylamines and  
hydrocarbons in the presence of hydroperoxides and copper  
catalysts)
- IT 75-98-9P, 2,2-Dimethylpropionic acid 182190-87-0P 378245-35-3P  
378245-36-4P 378245-37-5P  
(process for the synthesis of amine ethers from N-oxylamines and  
hydrocarbons in the presence of hydroperoxides and copper  
catalysts)
- IT 75-91-2, tert-Butyl hydroperoxide 79-21-0, Peracetic acid  
(process for the synthesis of amine ethers from N-oxylamines and  
hydrocarbons in the presence of hydroperoxides and copper  
catalysts)

L68 ANSWER 20 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:868459 HCAPLUS Full-text

DOCUMENT NUMBER: 136:6539

TITLE: Hydroxylamine esters as polymerization  
initiators

INVENTOR(S): Roth, Michael; Pfaendner, Rudolf; Nesvadba, Peter;  
Zink, Marie-Odile

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 114 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.                                                     | KIND | DATE     | APPLICATION NO. | DATE     |
|----------------------------------------------------------------|------|----------|-----------------|----------|
| -----                                                          | ---- | -----    | -----           | -----    |
| WO 2001090113                                                  | A1   | 20011129 | WO 2001-EP5447  | 20010514 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, |      |          |                 |          |

10/519,030

CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,  
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ,  
 LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
 NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR,  
 TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,  
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,  
 TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
 CA 2406255 A1 20011129 CA 2001-2406255 20010514  
 BR 2001010854 A 20030211 BR 2001-10854 20010514  
 EP 1282630 A1 20030212 EP 2001-931694 20010514  
 EP 1282630 B1 20060510  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR  
 JP 2003534347 T 20031118 JP 2001-586300 20010514  
 EP 1655303 A2 20060510 EP 2006-100223 20010514  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
 PT, IE, FI, CY, TR  
 AT 325801 T 20060615 AT 2001-931694 20010514  
 AU 784955 B2 20060810 AU 2001-58398 20010514  
 PT 1282630 T 20060929 PT 2001-931694 20010514  
 ES 2262647 T3 20061201 ES 2001-931694 20010514  
 RU 2298563 C2 20070510 RU 2002-133442 20010514  
 TW 249539 B 20060221 TW 2001-90111569 20010515  
 KR 783605 B1 20071207 KR 2002-714001 20021018  
 US 2003216494 A1 20031120 US 2002-275495 20021105  
 US 7030196 B2 20060418  
 IN 2002CN01865 A 20050211 IN 2002-CN1865 20021113  
 NO 2002005532 A 20030106 NO 2002-5532 20021118  
 MX 2002PA11344 A 20030425 MX 2002-PA11344 20021118  
 ZA 2002009397 A 20031016 ZA 2002-9397 20021119  
 US 2006128903 A1 20060615 US 2006-339214 20060125  
 IN 2007CN01321 A 20070831 IN 2007-CN1321 20070330  
 KR 2007086650 A 20070827 KR 2007-714491 20070625  
 PRIORITY APPLN. INFO.: EP 2000-810443 A 20000519  
 EP 2001-931694 A3 20010514  
 WO 2001-EP5447 W 20010514  
 KR 2002-714001 A3 20021018  
 US 2002-275495 A1 20021105  
 IN 2002-CN1865 A3 20021113

OTHER SOURCE(S): MARPAT 136:6539

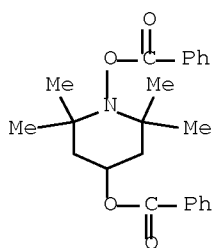
ED Entered STN: 30 Nov 2001

AB The invention relates to novel cyclic and open-chain hydroxylamine esters and polymerizable compns. comprising these hydroxylamine esters and an ethylenically unsatd. monomer or oligomer. The invention also relates to use as polymerization initiators and to the use of known hydroxylamine esters and the novel hydroxylamine esters for the controlled degradation of polypropylene and for achieving a controlled increase in the mol. weight of polyethylene.

IT 7031-92-7P  
 (hydroxylamine esters as polymerization initiators and  
 controlling degradation and mol. weight of polymers)

RN 7031-92-7 HCAPLUS

CN 4-Piperidinol, 1-(benzoyloxy)-2,2,6,6-tetramethyl-, benzoate (ester)  
 (8CI, 9CI) (CA INDEX NAME)



IC ICM C07F009-59  
ICS C07D295-24; C07D211-94; C07D241-08; C08F004-00; C08F008-50  
CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 27, 67  
ST hydroxylamine ester manuf polymn catalyst; radical polymn  
initiator hydroxylamine ester manuf  
IT Molecular weight  
Polymer degradation  
Polymer degradation catalysts  
(hydroxylamine esters as polymerization initiators and  
controlling degradation and mol. weight of polymers)  
IT EPDM rubber  
Linear low density polyethylenes  
(hydroxylamine esters as polymerization initiators and  
controlling degradation and mol. weight of polymers)  
IT Polymer blends  
(hydroxylamine esters as polymerization initiators and  
controlling degradation and mol. weight of polymers)  
IT Polymerization catalysts  
(radical; hydroxylamine esters as polymerization initiators and  
controlling degradation and mol. weight of polymers)  
IT 9002-88-4, Polyethylene  
(Lupolen 1812E, Hostalen GB 7250; hydroxylamine esters as polymerization  
initiators and controlling degradation and mol. weight of  
polymers)  
IT 376587-77-8P  
(ester of acetic acid; hydroxylamine esters as polymerization  
initiators and controlling degradation and mol. weight of  
polymers)  
IT 7031-92-7P 89108-37-2P 99365-17-0P 113682-53-4P  
122809-58-9P 123978-94-9P 130048-66-7P 271242-59-2P  
376587-78-9P 376587-79-0P 376587-80-3P 376587-81-4P  
376587-82-5P 376587-83-6P 376587-84-7P 376587-85-8P  
376587-86-9P 376587-87-0P 376587-88-1P 376587-89-2P  
376587-90-5P 376587-91-6P 376587-92-7P 376587-93-8P  
376587-94-9P 376587-95-0P 376587-96-1P 376587-97-2P  
376587-98-3P 376587-99-4P 376588-01-1P 376588-02-2P  
376588-03-3P 376588-04-4P 376588-05-5P 376588-06-6P  
376588-07-7P 376588-08-8P 376588-09-9P 376588-10-2P  
376588-11-3P 376588-13-5P 376588-15-7P 376588-17-9P  
376588-19-1P 376588-20-4P 376588-21-5P 376588-24-8P  
376588-27-1P 376588-29-3P 376588-30-6P 376588-31-7P  
376588-32-8P 376588-33-9P 376588-34-0P 376588-36-2P  
376588-37-3P 376588-38-4P 376588-39-5P 376588-40-8P  
376588-41-9P 376588-42-0P

(hydroxylamine esters as polymerization initiators and controlling degradation and mol. weight of polymers)

IT 376588-00-0P  
(hydroxylamine esters as polymerization initiators and controlling degradation and mol. weight of polymers)

IT 9003-49-0P, Butyl acrylate homopolymer  
(hydroxylamine esters as polymerization initiators and controlling degradation and mol. weight of polymers)

IT 199101-44-5P 376588-35-1P  
(hydroxylamine esters as polymerization initiators and controlling degradation and mol. weight of polymers)

IT 74-85-1D, Ethylene, polymers with  $\alpha$ -olefins 9003-07-0, Polypropylene 25085-53-4, Profax 6501  
(hydroxylamine esters as polymerization initiators and controlling degradation and mol. weight of polymers)

IT 79-21-0, Peracetic acid 79-37-8, Oxalyl chloride 98-88-4, Benzoyl chloride 102-92-1, Cinnamoyl chloride 103-71-9, Phenyl isocyanate, reactions 108-24-7, Acetic anhydride 109-90-0, Ethyl isocyanate 111-50-2, Adipoyl chloride 112-76-5, Stearoyl chloride 134-03-2, Sodium ascorbate 407-25-0, Trifluoroacetic anhydride 938-18-1, 2,4,6-Trimethylbenzoyl chloride 1310-73-2, Sodium hydroxide, reactions 1499-21-4, Diphenylphosphinic chloride 2094-72-6, 1-Adamantylcarboxylic acid chloride 2516-91-8 2516-92-9 3282-30-2, Pivaloyl chloride 3637-10-3, 1,4-Dihydroxy-2,2,6,6-tetramethylpiperidine 4972-13-8 6599-87-7 7803-49-8, Hydroxylamine, reactions 14691-89-5 16256-42-1, 2,2,5,5-Tetramethyl-4-oxoimidazolidine 22977-67-9 24424-99-5 51210-48-1 61682-93-7 61745-37-7 61746-17-6 61964-43-0 71981-32-3 80037-90-7 98254-32-1 150981-00-3 151419-17-9 154186-10-4 195300-91-5, Chimassorb 2020 244020-99-3 244021-06-5 258289-25-7 264279-93-8 264280-22-0 376588-12-4 376588-14-6 376588-16-8  
(hydroxylamine esters as polymerization initiators and controlling degradation and mol. weight of polymers)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 21 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:718062 HCAPLUS Full-text

DOCUMENT NUMBER: 135:273360

TITLE: Vinyl group-containing alkoxyamines, manufacture of them and radical polymerization initiators, and graft polymers manufactured using the initiators

INVENTOR(S): Hayashi, Masaki; Nakamura, Tomoyuki; Ujigawa, Norihisa

PATENT ASSIGNEE(S): NOF Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE       |
|------------------------|------|----------|-----------------|------------|
| -----                  | ---- | -----    | -----           | -----      |
| JP 2001270859          | A    | 20011002 | JP 2000-125936  | 20000426   |
| PRIORITY APPLN. INFO.: |      |          | JP 2000-8340    | A 20000117 |

OTHER SOURCE(S): MARPAT 135:273360

ED Entered STN: 02 Oct 2001

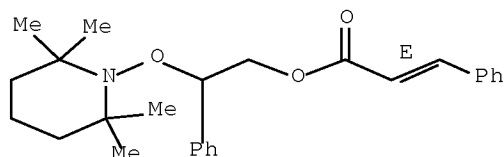
AB  $R_1CO_2CH_2CR_8R_9ON(CR_2R_3R_4)CR_5R_6R_7$  [ $R_1$  = monovalent organic group having radically polymerizable vinyl group;  $R_2-R_7$  = C1-4 linear or branched alkyl;  $R_2R_7$  may form (un)substituted C4-12 ring;  $R_8$  = H, Me;  $R_9$  = Ph, MeC<sub>6</sub>H<sub>4</sub>, cyano, C1-4 alkoxy carbonyl, C1-4 alkylcarbonyloxy] are manufactured by decomposition of  $(R_1CO_2)_2$  ( $R_1$  = same as above) in the presence of  $\cdot ON(CR_2R_3R_4)CR_5R_6R_7$  ( $R_2-R_7$  = same as above) and  $H_2C:CR_8R_9$  ( $R_8, R_9$  = same as above). Thus, styrene was reacted with 2,2,6,6-tetramethylpiperidine-1-oxyl and cinnamoyl peroxide to give  $PhCH:CHCO_2CH_2CHPhOZ$  ( $Z$  = 2,2,6,6-tetramethylpiperidino), which was polymerized with (chloromethyl)styrene to give alkoxyamine-modified poly[(chloromethyl)styrene] with  $M_n$  48,000. Styrene was polymerized in the presence of the initiator to give (chloromethyl)styrene-styrene graft copolymer.

IT 362660-50-2F  
(manufacture of vinyl group-containing alkoxyamines for manufacture of polymerization initiators and graft polymers)

RN 362660-50-2 HCAPLUS

CN 2-Propenoic acid, 3-phenyl-, 2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl ester, (2E)- (CA INDEX NAME)

Double bond geometry as shown.



IC ICM C07C239-20  
ICS C07D211-94; C08F004-00; C08F216-14; C08F218-00; C08F220-36;  
C08F291-00

CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 27

IT 362660-50-2F 362660-51-3P 362660-52-4P  
362660-53-5P 362660-54-6P 362660-55-7P  
362660-56-8P 362660-57-9P 362660-58-0P  
(manufacture of vinyl group-containing alkoxyamines for manufacture of polymerization initiators and graft polymers)

IT 362660-59-1P 362660-60-4P 362660-61-5P  
(polymerization initiator; manufacture of vinyl group-containing alkoxyamines for manufacture of polymerization initiators and graft polymers)

L68 ANSWER 22 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:662112 HCAPLUS Full-text

DOCUMENT NUMBER: 135:372063

TITLE: Synthesis of poly(methylene-b-styrene) by sequential living polymerization

AUTHOR(S): Zhou, Xian-Zhi; Shea, Kenneth J.

CORPORATE SOURCE: Department of Chemistry, University of California, Irvine, CA, 92696-2025, USA

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2001), 42(2),

411-412

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

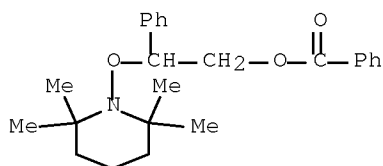
ED Entered STN: 11 Sep 2001

AB We have recently developed a synthesis of telechelic polymethylene. Organoboranes serve as the initiator and dimethylsulfoxonium methylide (1) functions as the monomer. The carbon chain is built up one carbon at a time by repetitive homologation (polyhomologation) of alkyl substituents. The living nature of the polyhomologation reaction permits control of the mol. weight as well as the functionality at either end of the polymer chain. We are utilizing polyhomologation chemical to develop general methods for the synthesis of well defined copolymers of polymethylene and the major commodity polyolefins. AB block copolymer of poly(methylene-b-styrene) was chosen as the targets of this research. The block copolymers are useful compatibilizers in PE/PS polymer blends.

IT 81913-53-3P  
(polymerization initiator synthesis; synthesis of poly(methylene-b-styrene) by sequential living polymerization)

RN 81913-53-3 HCAPLUS

CN Benzeneethanol,  $\beta$ -[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]-, 1-benzoate (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 37

IT 94-36-0, Benzoyl peroxide, reactions 100-42-5, Styrene, reactions  
2564-83-2, TEMPO

(polymerization initiator synthesis; synthesis of poly(methylene-b-styrene) by sequential living polymerization)

IT 81913-53-3P  
(polymerization initiator synthesis; synthesis of poly(methylene-b-styrene) by sequential living polymerization)

IT 161776-41-6P  
(polymerization initiator; synthesis of poly(methylene-b-styrene) by sequential living polymerization)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 23 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:582410 HCAPLUS Full-text

DOCUMENT NUMBER: 135:289127

TITLE: Nitroxide-Mediated Miniemulsion Acrylate Polymerization

AUTHOR(S): Keoshkerian, Barkev; Szkurhan, Andrea R.; Georges, Michael K.



CORPORATE SOURCE: Xerox Research Centre of Canada, Mississauga, ON,  
L5K 2L1, Can.  
SOURCE: Macromolecules (2001), 34(19), 6531-6532  
CODEN: MAMOBX; ISSN: 0024-9297  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

ED Entered STN: 12 Aug 2001

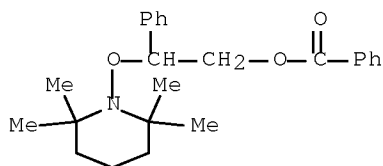
AB Bu acrylate can be polymerized by a stable free radical polymerization miniemulsion process at 135° using alkoxyamine terminated with TEMPO as initiator in the presence of a small amount of ascorbic acid. The conversion was 60-65%. Polydispersities were broader than when hydroxy-containing nitroxide was used, but the polymers were living as seen by the incremental increase in mol. weight with time.

IT 81913-53-3

(miniemulsion polymerization of Bu acrylate in presence of)

RN 81913-53-3 HCAPLUS

CN Benzeneethanol,  $\beta$ -[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]-,  
1-benzoate (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT Polymerization catalysts

(emulsion; miniemulsion polymerization of Bu acrylate in presence of  
TEMPO-terminated alkoxyamine initiator)

IT 81913-53-3

(miniemulsion polymerization of Bu acrylate in presence of)

IT 9003-49-0P, Poly(butyl acrylate)

(miniemulsion polymerization of Bu acrylate in presence of  
TEMPO-terminated alkoxyamine initiator)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 24 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:165813 HCAPLUS Full-text

DOCUMENT NUMBER: 134:223147

TITLE: Functionalized alkoxyamine  
initiators for radical polymerization and  
their preparation

INVENTOR(S): Melchior, Martin; Hoecker, Hartwig; Keul, Helmut;  
Achten, Dirk

PATENT ASSIGNEE(S): Bayer A.-G., Germany

SOURCE: Ger. Offen., 13 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

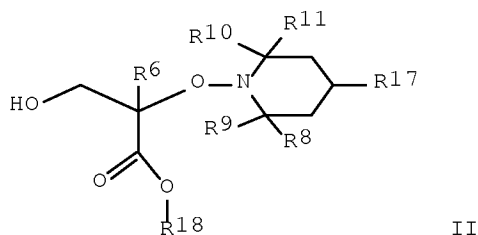
PATENT INFORMATION:

| PATENT NO.                                                                                   | KIND | DATE     | APPLICATION NO.  | DATE        |
|----------------------------------------------------------------------------------------------|------|----------|------------------|-------------|
| DE 19942615                                                                                  | A1   | 20010308 | DE 1999-19942615 | 19990907    |
| EP 1083169                                                                                   | A1   | 20010314 | EP 2000-118124   | 20000828    |
| EP 1083169                                                                                   | B1   | 20031029 |                  |             |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,<br>PT, IE, SI, LT, LV, FI, RO |      |          |                  |             |
| EP 1083186                                                                                   | A1   | 20010314 | EP 2000-118125   | 20000828    |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,<br>PT, IE, SI, LT, LV, FI, RO |      |          |                  |             |
| ES 2208197                                                                                   | T3   | 20040616 | ES 2000-118124   | 20000828    |
| US 6573346                                                                                   | B1   | 20030603 | US 2000-652075   | 20000831    |
| US 6632895                                                                                   | B1   | 20031014 | US 2000-652203   | 20000831    |
| CA 2317321                                                                                   | A1   | 20010307 | CA 2000-2317321  | 20000901    |
| CA 2317323                                                                                   | A1   | 20010307 | CA 2000-2317323  | 20000901    |
| JP 2001081117                                                                                | A    | 20010327 | JP 2000-271541   | 20000907    |
| JP 2001106713                                                                                | A    | 20010417 | JP 2000-271549   | 20000907    |
| US 2003208021                                                                                | A1   | 20031106 | US 2003-408625   | 20030407    |
| US 6800708                                                                                   | B2   | 20041005 |                  |             |
| PRIORITY APPLN. INFO.:                                                                       |      |          | DE 1999-19942614 | A 19990907  |
|                                                                                              |      |          | DE 1999-19942615 | A 19990907  |
|                                                                                              |      |          | US 2000-652075   | A3 20000831 |

OTHER SOURCE(S): MARPAT 134:223147

ED Entered STN: 09 Mar 2001

GI

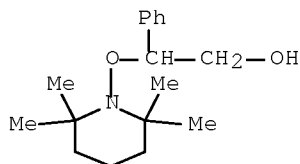


AB Alkoxyamines HOCHR<sub>1</sub>CR<sub>2</sub>R<sub>3</sub>ONR<sub>4</sub>R<sub>5</sub> (I) (more specifically, II are claimed as new compds.) [R<sub>1</sub>-R<sub>3</sub> = H, C<sub>1</sub>-20 (cyclo)alkyl, C<sub>6</sub>-24 aryl, halogen, CN, amide or ester group; R<sub>4</sub>, R<sub>5</sub> = C<sub>1</sub>-24 organic group in which the N-linked C bears no H; R<sub>4</sub> + R<sub>5</sub> optionally contains ≥1 reactive functional group; R<sub>6</sub> = H, C<sub>1</sub>-20 (cyclo)alkyl; R<sub>8</sub>-R<sub>11</sub> = C<sub>1</sub>-20 (cyclo)alkyl, C<sub>6</sub>-24 aryl, (un)substituted C<sub>7</sub>-C<sub>24</sub> aralkyl, ring portion; R<sub>17</sub> = H, reactive functional group; R<sub>18</sub> = C<sub>1</sub>-20 (cyclo)alkyl] are prepared by reaction of R<sub>1</sub>CH:CR<sub>2</sub>R<sub>3</sub> with R<sub>4</sub>R<sub>5</sub>NO in the presence of H<sub>2</sub>O<sub>2</sub> and a reducing agent, and are used as initiators of radical polymerization of vinyl monomers. Thus, addition of 50 mL 30% H<sub>2</sub>O<sub>2</sub> dropwise over 5 h to a solution of 1 mol styrene and 0.1 mol 2,2,6,6-tetramethyl-1-piperidinyloxy in 300 mL MeOH at 40° containing 0.12 mol FeSO<sub>4</sub>·7H<sub>2</sub>O and 0.24 mol NaHCO<sub>3</sub> gave I [R<sub>1</sub> = R<sub>2</sub> = H, R<sub>3</sub> = Ph, R<sub>4</sub>R<sub>5</sub> = CMe<sub>2</sub>(CH<sub>2</sub>)<sub>3</sub>CMe<sub>2</sub>] in 71% yield.

IT 161776-41-6P

(preparation of functionalized alkoxyamine initiators  
for radical polymerization)

RN 161776-41-6 HCAPLUS  
 CN Benzeneethanol,  $\beta$ -[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]- (CA  
 INDEX NAME)



IC ICM C07D211-94  
 ICS C07D247-00; C07D273-00  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 27  
 ST alkoxyamine initiator vinyl polymn  
 IT Polymerization catalysts  
 (preparation of functionalized alkoxyamine initiators  
 for radical polymerization)  
 IT 161776-41-6P 183959-05-9P 329180-72-5P  
 329326-50-3P 329326-51-4P 329326-52-5P  
 329326-53-6P  
 (preparation of functionalized alkoxyamine initiators  
 for radical polymerization)  
 IT 329326-49-0P  
 (preparation of functionalized alkoxyamine initiators  
 for radical polymerization)  
 IT 144-55-8, Sodium bicarbonate, uses  
 (preparation of functionalized alkoxyamine initiators  
 for radical polymerization)  
 IT 80-62-6, Methyl methacrylate 96-33-3, Methyl acrylate 97-88-1,  
 Butyl methacrylate 100-42-5, Styrene, reactions 101-43-9,  
 Cyclohexyl methacrylate 103-11-7, 2-Ethylhexyl acrylate 108-31-6,  
 Maleic anhydride, reactions 141-32-2, Butyl acrylate 2226-96-2,  
 1-Piperidinyl-oxy, 4-hydroxy-2,2,6,6-tetramethyl- 2564-83-2, TEMPO  
 7534-94-3, Isobornyl methacrylate 7722-84-1, Hydrogen peroxide,  
 reactions 14691-89-5  
 (preparation of functionalized alkoxyamine initiators  
 for radical polymerization)  
 IT 7720-78-7, Ferrous sulfate  
 (reducing agent; preparation of functionalized alkoxyamine  
 initiators for radical polymerization)

L68 ANSWER 25 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2001:165812 HCAPLUS Full-text  
 DOCUMENT NUMBER: 134:223167  
 TITLE: Process for the manufacture of telechelic vinyl  
 oligomers and polymers and their use  
 INVENTOR(S): Melchior, Martin; Hoecker, Hartwig; Keul, Helmut;  
 Achten, Dirk  
 PATENT ASSIGNEE(S): Bayer A.-G., Germany  
 SOURCE: Ger. Offen., 12 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German

10/519,030

FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

| PATENT NO.                                                                                   | KIND | DATE     | APPLICATION NO.  | DATE        |
|----------------------------------------------------------------------------------------------|------|----------|------------------|-------------|
| DE 19942614                                                                                  | A1   | 20010308 | DE 1999-19942614 | 19990907    |
| EP 1083169                                                                                   | A1   | 20010314 | EP 2000-118124   | 20000828    |
| EP 1083169                                                                                   | B1   | 20031029 |                  |             |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,<br>PT, IE, SI, LT, LV, FI, RO |      |          |                  |             |
| EP 1083186                                                                                   | A1   | 20010314 | EP 2000-118125   | 20000828    |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,<br>PT, IE, SI, LT, LV, FI, RO |      |          |                  |             |
| ES 2208197                                                                                   | T3   | 20040616 | ES 2000-118124   | 20000828    |
| US 6573346                                                                                   | B1   | 20030603 | US 2000-652075   | 20000831    |
| US 6632895                                                                                   | B1   | 20031014 | US 2000-652203   | 20000831    |
| CA 2317321                                                                                   | A1   | 20010307 | CA 2000-2317321  | 20000901    |
| CA 2317323                                                                                   | A1   | 20010307 | CA 2000-2317323  | 20000901    |
| JP 2001081117                                                                                | A    | 20010327 | JP 2000-271541   | 20000907    |
| JP 2001106713                                                                                | A    | 20010417 | JP 2000-271549   | 20000907    |
| US 2003208021                                                                                | A1   | 20031106 | US 2003-408625   | 20030407    |
| US 6800708                                                                                   | B2   | 20041005 |                  |             |
| PRIORITY APPLN. INFO.:                                                                       |      |          | DE 1999-19942614 | A 19990907  |
|                                                                                              |      |          | DE 1999-19942615 | A 19990907  |
|                                                                                              |      |          | US 2000-652075   | A3 20000831 |

OTHER SOURCE(S): MARPAT 134:223167

ED Entered STN: 09 Mar 2001

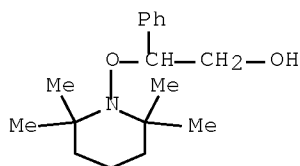
AB The telechelic entities, of number-average mol. weight 500-10,000 and with OH at one chain end and a group reactive toward NCO, OH, CO<sub>2</sub>H, anhydride, or epoxy groups at the other, are prepared by polymerization of vinyl monomers in the presence of an alkoxyamine initiator HOCHR<sub>1</sub>CR<sub>2</sub>R<sub>3</sub>ONR<sub>4</sub>R<sub>5</sub> [R<sub>1</sub>-R<sub>3</sub> = H, C<sub>1</sub>-20 (cyclo)alkyl, C<sub>6</sub>-24 aryl, halogen, CN, ester or amide group; R<sub>4</sub>, R<sub>5</sub> = C<sub>1</sub>-24 organic group (at least partly aliphatic)]. They can then react with unsatd. alcs., isocyanates, acids, anhydrides or epoxides to form, e.g., macromonomers with OH functionality at the far end of the chain. Thus, 40 equiv styrene was polymerized for 4 h at 130° in the presence of 1 equiv 1-(2-hydroxy-1-phenylethoxy)-2,2,6,6-tetramethyl-4-piperidinol to give a polystyrene with Mn 2190 and OH functionality >1.9 in 53% yield.

IT 161776-41-6

(initiator in manufacture of telechelic vinyl oligomers and polymers)

RN 161776-41-6 HCAPLUS

CN Benzeneethanol,  $\beta$ -[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]- (CA INDEX NAME)



IC ICM C08F020-18

10/519,030

ICS C08F022-06; C08F012-08; C08F002-42  
CC 35-4 (Chemistry of Synthetic High Polymers)  
ST telechelic vinyl oligomer manuf; alkoxyamine  
initiator vinyl monomer polymn  
IT Polymers, preparation  
(telechelic; manufacture of telechelic vinyl oligomers and polymers by  
use of alkoxyamine initiator)  
IT 161776-41-6 183959-05-9 329180-72-5  
(initiator in manufacture of telechelic vinyl oligomers and polymers)

L68 ANSWER 26 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:137295 HCAPLUS Full-text

DOCUMENT NUMBER: 134:179364

TITLE: Polymer blends with improved impact resistance

INVENTOR(S): Chin, Hui; Botkin, James Harold; Fuso, Francesco;  
Wunderlich, Wiebke

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holdings Inc., Switz.

SOURCE: PCT Int. Appl., 53 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.                                                                                                                                                                                                                                                                                                                                                                                   | KIND | DATE     | APPLICATION NO. | DATE        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-----------------|-------------|
| -----                                                                                                                                                                                                                                                                                                                                                                                        | ---- | -----    | -----           | -----       |
| WO 2001012721                                                                                                                                                                                                                                                                                                                                                                                | A1   | 20010222 | WO 2000-EP7528  | 20000803    |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,<br>CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH,<br>GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK,<br>LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ,<br>PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ,<br>UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |      |          |                 |             |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,<br>CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,<br>BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG                                                                                                                                                                                                 |      |          |                 |             |
| CA 2376569                                                                                                                                                                                                                                                                                                                                                                                   | A1   | 20010222 | CA 2000-2376569 | 20000803    |
| EP 1203054                                                                                                                                                                                                                                                                                                                                                                                   | A1   | 20020508 | EP 2000-949448  | 20000803    |
| EP 1203054                                                                                                                                                                                                                                                                                                                                                                                   | B1   | 20041103 |                 |             |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,<br>PT, IE, SI, LT, LV, FI, RO, MK, CY, AL                                                                                                                                                                                                                                                                                     |      |          |                 |             |
| JP 2003507516                                                                                                                                                                                                                                                                                                                                                                                | T    | 20030225 | JP 2001-517611  | 20000803    |
| AT 281496                                                                                                                                                                                                                                                                                                                                                                                    | T    | 20041115 | AT 2000-949448  | 20000803    |
| ES 2231225                                                                                                                                                                                                                                                                                                                                                                                   | T3   | 20050516 | ES 2000-949448  | 20000803    |
| US 6444754                                                                                                                                                                                                                                                                                                                                                                                   | B1   | 20020903 | US 2000-634441  | 20000808    |
| US 2003088027                                                                                                                                                                                                                                                                                                                                                                                | A1   | 20030508 | US 2002-192091  | 20020710    |
| US 6765062                                                                                                                                                                                                                                                                                                                                                                                   | B2   | 20040720 |                 |             |
| PRIORITY APPLN. INFO.:                                                                                                                                                                                                                                                                                                                                                                       |      |          | US 1999-148499P | P 19990812  |
|                                                                                                                                                                                                                                                                                                                                                                                              |      |          | WO 2000-EP7528  | W 20000803  |
|                                                                                                                                                                                                                                                                                                                                                                                              |      |          | US 2000-634441  | A3 20000808 |

ED Entered STN: 25 Feb 2001

AB Polymer blends, in particular polyphenylene ether-polyamide blends, are  
effectively compatibilized by incorporating certain oligomers, cooligomers,  
polymers and copolymers of narrow mol. weight distribution that are prepared  
under free radical polymerization conditions with glycidyl-functionalized  
nitroxyl initiators. The oligomers, cooligomers, polymers and copolymers  
contain  $\geq 1$  oxyamine group and  $\geq 1$  glycidyl-containing initiator group. Thus, a

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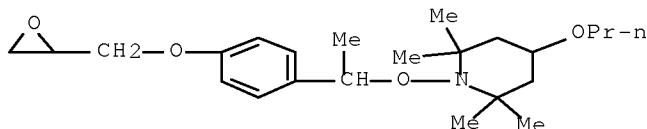
blend of HPP 820 37.5, nylon 66 37.5, Kraton FG 10, and polystyrene having glycidyl and oxyamine groups 15 parts was kneaded/extruded, and injection molded into samples having notched Izod impact strength 1.67, tensile strength 5.0 kg/mm<sup>2</sup>, elongation 27%, and break energy 57 kg-mm; vs. 0.54, 6.2, 15, and 27, resp., for a 50:50 HPP 820:nylon 66 blend.

IT 243972-01-2F

(polymer blends with improved impact resistance)

RN 243972-01-2 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-[1-[4-(oxiranylmethoxy)phenyl]ethoxy]-4-propoxy- (9CI) (CA INDEX NAME)



IC ICM C08L071-12

ICS C08L077-00; C08L067-00; C08L025-04

CC 37-6 (Plastics Manufacture and Processing)

IT 243972-01-2F

(polymer blends with improved impact resistance)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 27 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:61904 HCAPLUS Full-text

DOCUMENT NUMBER: 134:252044

TITLE: Factors Influencing the C-O Bond Homolysis of Alkoxyamines: Effects of H-Bonding and Polar Substituents

AUTHOR(S): Marque, Sylvain; Fischer, Hanns; Baier, Elisabeth; Studer, Armido

CORPORATE SOURCE: Physikalisch-Chemisches Institut, Universitaet Zuerich, Zurich, CH-8057, Switz.

SOURCE: Journal of Organic Chemistry (2001), 66(4), 1146-1156

CODEN: JOCEAH; ISSN: 0022-3263

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 134:252044

ED Entered STN: 26 Jan 2001

AB The synthesis of various new trialkylhydroxylamines is described. The rate constant of the C-O bond cleavage of these new alkoxyamines has been measured. For example, C-O bond homolysis rates in a series of para-substituted TEMPO-styryl compds. TEMPO-CH(CH<sub>3</sub>)C<sub>6</sub>H<sub>5</sub>X (p-MeO, p-Me, p-H, p-Br, and p-MeO<sub>2</sub>C) are presented. Furthermore, rate consts. for the C-O bond cleavage of  $\alpha$ -heteroaryl-substituted secondary alkoxyamines are discussed. A correlation by which the rate constant for the C-O bond cleavage of TEMPO-derived alkoxyamines can be predicted from the C-H BDEs of the corresponding alkanes is presented. Solvent effects as well as the effect of camphorsulfonic acid on the rate of the C-O bond homolysis are discussed. Finally, EPR and kinetic evidence show that alkoxyamines derived from nitroxides which are capable of

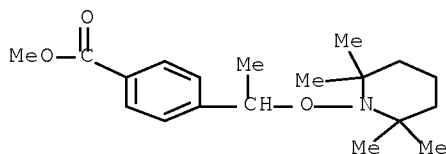
intramol. H-bonding undergo C-O bond cleavage faster than the corresponding non-H-bond-forming analogs.

IT 212132-39-3P

(effects of H-bonding and polar substituents on the C-O bond  
homolysis kinetics of alkoxyamines)

RN 212132-39-3 HCAPLUS

CN Benzoic acid, 4-[1-[(2,2,6,6-tetramethyl-1-piperidinyloxy)ethyl]-,  
methyl ester (CA INDEX NAME)



CC 22-8 (Physical Organic Chemistry)

Section cross-reference(s): 35

IT 212132-39-3P 270901-39-8P 270901-51-4P

270901-52-5P 270901-53-6P 270901-54-7P 270901-56-9P

270901-82-1P 270901-83-2P 270901-86-5P 270901-97-8P

270901-98-9P 270902-02-8P 330938-04-0P 330938-05-1P

330938-06-2P 330938-07-3P 330938-08-4P 330938-09-5P

330938-10-8P 330938-11-9P 330938-14-2P

(effects of H-bonding and polar substituents on the C-O bond  
homolysis kinetics of alkoxyamines)

REFERENCE COUNT: 77 THERE ARE 77 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 28 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:911209 HCAPLUS Full-text

DOCUMENT NUMBER: 134:72025

TITLE: Preparation of vinyl-containing alkoxyamines used  
as polymerizable monomers of polymeric radical  
initiators for manufacture of graft copolymers

INVENTOR(S): Hayashi, Masaki; Nakamura, Tomoyuki; Ujikawa,  
Norihiisa

PATENT ASSIGNEE(S): NOF Corporation, Japan

SOURCE: PCT Int. Appl., 69 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO.    | KIND                                                        | DATE     | APPLICATION NO. | DATE     |
|---------------|-------------------------------------------------------------|----------|-----------------|----------|
| -----         | ----                                                        | -----    | -----           | -----    |
| WO 2000078709 | A1                                                          | 20001228 | WO 2000-JP3170  | 20000517 |
| W:            | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, |          |                 |          |
|               | CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, |          |                 |          |
|               | HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, |          |                 |          |
|               | LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, |          |                 |          |
|               | RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, |          |                 |          |
|               | UZ, VN, YU, ZA, ZW                                          |          |                 |          |
| RW:           | GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, |          |                 |          |
|               | DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, |          |                 |          |

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BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

|               |    |          |                |          |
|---------------|----|----------|----------------|----------|
| JP 2000095744 | A  | 20000404 | JP 1999-177422 | 19990623 |
| JP 2001064308 | A  | 20010313 | JP 1999-242052 | 19990827 |
| AU 2000046142 | A  | 20010109 | AU 2000-46142  | 20000517 |
| EP 1188742    | A1 | 20020320 | EP 2000-927796 | 20000517 |
| EP 1188742    | B1 | 20041215 |                |          |

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO

|            |    |          |                |          |
|------------|----|----------|----------------|----------|
| AT 284862  | T  | 20050115 | AT 2000-927796 | 20000517 |
| US 6919481 | B1 | 20050719 | US 2001-959754 | 20000517 |

PRIORITY APPLN. INFO.: JP 1999-177422 A 19990623

JP 1999-242052 A 19990827

JP 1998-206146 A 19980722

WO 2000-JP3170 W 20000517

OTHER SOURCE(S): MARPAT 134:72025

ED Entered STN: 29 Dec 2000

AB The title alkoxyamine (I) represented by general formula:  
 $R_1COOCH_2CH(C_6H_4CH:CH_2)ONR_3R_4$ , wherein  $R_1$ =aryl or  $R_2O$ ,  $R_2$ =C1-12 linear or branched (cyclo)alkyl,  $R_3$ ,  $R_4$ =C4-6 tertiary alkyl, or a C8-16 cyclic structure by bonding  $R_3$  and  $R_4$  together, is prepared by reacting a divinylbenzene with a nitroxide compound and an organic peroxide (II) at the decomposition temperature of II. Thus, heating the mixture of DVB-960 (mixture of m- and p-divinylbenzene) 50, 4-hydroxy-TEMPO 8.6 and diisopropyl peroxydicarbonate 11.6 g at 50° for 5 h gave an I, 0.62 g of which was mixed with 4.41 g Me methacrylate and 0.01 g tert-hexyl peroxy-pivalate and polymerized at 60° for 6 h to give a copolymer having graftable radical initiator sites.

IT 313975-54-1P

(preparation of vinyl-containing alkoxyamines used as polymerizable monomers

of polymeric radical initiators for manufacture of graft copolymers)

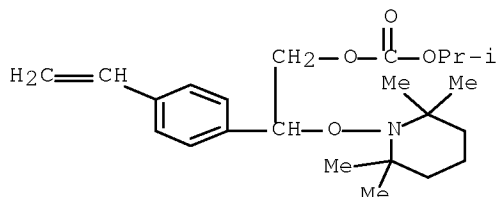
RN 313975-54-1 HCAPLUS

CN Carbonic acid, 2-(4-ethenylphenyl)-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl 1-methylethyl ester, polymer with 1-(chloromethyl)-4-ethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 262616-04-6

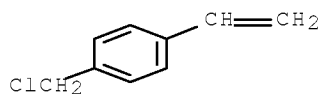
CMF C23 H35 N O4



CM 2



CRN 1592-20-7  
CMF C9 H9 Cl



IC ICM C07C239-20  
ICS C07D211-94; C08F257-00; C08F004-00; C08F012-14  
CC 35-2 (Chemistry of Synthetic High Polymers)  
IT 313975-54-1P 313975-55-2P 314774-28-2P  
314774-29-3P 314776-49-3P 314776-50-6P 314776-51-7P  
314776-52-8P 314776-53-9P  
(preparation of vinyl-containing alkoxyamines used as polymerizable monomers  
of polymeric radical initiators for manufacture of graft copolymers)  
IT 262616-03-5P 262616-04-6P 262616-05-7P  
262616-06-8P 262616-07-9P 262616-08-0P  
262616-09-1P 262616-10-4P 262616-11-5P  
262616-12-6P 262846-44-6P 262846-45-7P 262846-46-8P  
(radical-initiatable monomer; preparation of vinyl-containing alkoxyamines used as polymerizable monomers of polymeric radical initiators for manufacture of graft copolymers)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 29 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:610052 HCAPLUS Full-text

DOCUMENT NUMBER: 133:322184

TITLE: Synthesis of oligomers by stable free radical polymerization of acrylates, methacrylates, and styrene with alkoxyamine initiators

AUTHOR(S): Keul, Helmut; Achten, Dirk; Reining, Birte; Hocker, Hartwig

CORPORATE SOURCE: Lehrstuhl für Textilchemie und Makromolekulare Chemie der Rheinisch-Westfälischen Technischen Hochschule Aachen, Aachen, 52056, Germany

SOURCE: ACS Symposium Series (2000), 768 (Controlled/Living Radical Polymerization), 408-426  
CODEN: ACSMC8; ISSN: 0097-6156

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 03 Sep 2000

AB A controlled polymerization of styrene (St) and Me acrylate (MA) yielding oligomers of  $M_n \leq 2000$  was achieved using an alkoxyamine as the initiator. For the polymerization of Me methacrylate (MMA) side reactions leading to unsatd. end groups prohibit the control of the polymerization. The extent of the side reactions is explained by a sterically hindered combination of TEMPO with the active PMMA chain end. Copolymn. of MA with St reveals an increase of the polymerization rate compared to those of the homopolymns. and a good control of the MA/St copolymer composition within a wide range. The copolymn. parameters were found to be in good agreement with those observed in the free

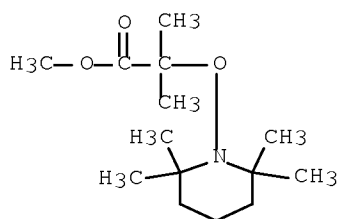
radical polymerization For the copolymn. of MMA with St a controlled polymerization was achieved at molar fractions of styrene higher than 50 %.

IT 115191-52-1

(synthesis of oligomers by stable free radical polymerization of acrylates, methacrylates, and styrene with alkoxyamine initiators)

RN 115191-52-1 HCAPLUS

CN Propanoic acid, 2-methyl-2-[(2,2,6,6-tetramethyl-1-piperidinyloxy)-, methyl ester (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymerization

Polymerization catalysts

(radical; synthesis of oligomers by stable free radical polymerization of acrylates, methacrylates, and styrene with alkoxyamine initiators)

IT Polydispersity

(synthesis of oligomers by stable free radical polymerization of acrylates, methacrylates, and styrene with alkoxyamine initiators)

IT 2564-83-2, TEMPO 115191-52-1 154554-67-3  
212128-87-5

(synthesis of oligomers by stable free radical polymerization of acrylates, methacrylates, and styrene with alkoxyamine initiators)

IT 9003-21-8P, Poly(methyl acrylate) 9003-53-6P, Polystyrene  
9011-14-7P, PMMA 25034-86-0P, Methyl methacrylate-styrene copolymer  
25036-19-5P, Methyl acrylate-styrene copolymer

(synthesis of oligomers by stable free radical polymerization of acrylates, methacrylates, and styrene with alkoxyamine initiators)

REFERENCE COUNT: 55 THERE ARE 55 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 30 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:417358 HCAPLUS Full-text

DOCUMENT NUMBER: 133:164347

TITLE: Rate Constants for the Trapping of Various Carbon-Centered Radicals by Nitroxides: Unimolecular Initiators for Living Free Radical Polymerization

AUTHOR(S): Skene, W. G.; Scaiano, J. C.; Listigovers, Nancy A.; Kazmaier, Peter M.; Georges, Michael K.

CORPORATE SOURCE: Department of Chemistry, University of Ottawa, Ottawa, ON, K1N 6N5, Can.

SOURCE: Macromolecules (2000), 33(14), 5065-5072

10/519,030

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

ED Entered STN: 23 Jun 2000

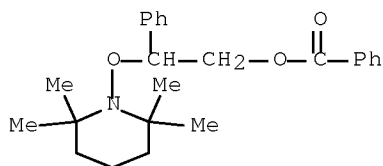
AB The recapping kinetics of a series of unimol. initiators for free radical polymerization were investigated. The rate consts. for the trapping of various carbon-centered radicals were analyzed as a function of structurally different nitroxides in order to determine suitable candidates for living free radical polymerization (LFRP). The technique of laser flash photolysis was used to determine the trapping rate consts. for the radicals in the presence of various amts. of nitroxide and to also gain insight into the properties of the LFRP process.

IT 81913-53-3P

(rate consts. for trapping of carbon-centered radicals by nitroxides and living radical polymerization)

RN 81913-53-3 HCAPLUS

CN Benzeneethanol,  $\beta$ -[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]-, 1-benzoate (CA INDEX NAME)



CC 35-2 (Chemistry of Synthetic High Polymers)

IT 81913-53-3P 117174-68-2P 154554-67-3P

183194-54-9P 212128-87-5P 288098-79-3P

(rate consts. for trapping of carbon-centered radicals by nitroxides and living radical polymerization)

REFERENCE COUNT: 69 THERE ARE 69 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 31 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:244986 HCAPLUS Full-text

DOCUMENT NUMBER: 133:4352

TITLE: Tin-free radical cyclization reactions using the persistent radical effect

AUTHOR(S): Studer, Armido

CORPORATE SOURCE: Lab. Org. Chem., Eidg. Tech. Hochsch., Zurich, 8092, Switz.

SOURCE: Angewandte Chemie, International Edition (2000), 39(6), 1108-1111

CODEN: ACIEF5; ISSN: 1433-7851

PUBLISHER: Wiley-VCH Verlag GmbH

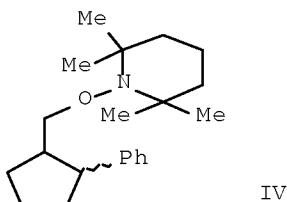
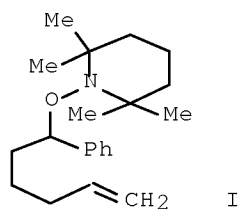
DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 133:4352

ED Entered STN: 17 Apr 2000

GI



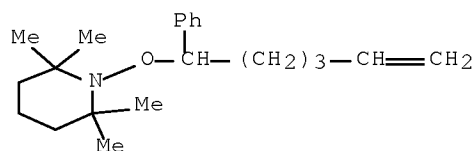
AB The persistent radical effect (the general principle that explains the highly specific formation of cross-coupling product R1-R2 between two radicals R1 and R2 when one species is long-lived and the other is transient and they are formed at equal rates) was exhibited in the isomerization of I to IV (up to 70% yield) in t-BuOH in presence of camphorsulfonic acid. Ionic and solvent-cage mechanisms were excluded. Scope and limitations of the reaction were examined by introducing Ph substituents and by varying the Ph group (e.g., 2-thienyl, 2-pyridyl) and the nitroxide moiety. Addnl. demonstrations of the superiority of the present alkoxyamine-mediated cyclization over the Bu3SnH-mediated reaction were presented.

IT 270901-39-8P

(isomerization; tin-free radical cyclization reactions following C-O bond homolysis of (alkenyloxy)amines derived from long-lived nitroxides as a demonstration of the persistent radical effect)

RN 270901-39-8 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-[(1-phenyl-5-hexen-1-yl)oxy]- (CA INDEX NAME)



CC 22-5 (Physical Organic Chemistry)

IT 270901-39-8P 270901-51-4P 270901-52-5P

270901-53-6P 270901-54-7P 270901-55-8P 270901-56-9P

270901-79-6P 270901-83-2P 270901-84-3P 270901-85-4P

270901-86-5P

(isomerization; tin-free radical cyclization reactions following C-O bond homolysis of (alkenyloxy)amines derived from long-lived nitroxides as a demonstration of the persistent radical effect)

IT 270902-07-3P

(tin-free radical cyclization reactions following C-O bond homolysis of (alkenyloxy)amines derived from long-lived nitroxides as a demonstration of the persistent radical effect)

REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 32 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:215991 HCAPLUS Full-text

DOCUMENT NUMBER: 132:250988

10/519,030

TITLE: One-step preparation of vinyl group-containing alkoxyamines as radical generators  
 INVENTOR(S): Hayashi, Masaki; Nakamura, Tomoyuki  
 PATENT ASSIGNEE(S): Nippon Oil and Fats Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

| PATENT NO.                                                                                                                                                                                                                                                                                                                        | KIND | DATE     | APPLICATION NO. | DATE       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-----------------|------------|
| JP 2000095744                                                                                                                                                                                                                                                                                                                     | A    | 20000404 | JP 1999-177422  | 19990623   |
| WO 2000078709                                                                                                                                                                                                                                                                                                                     | A1   | 20001228 | WO 2000-JP3170  | 20000517   |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW |      |          |                 |            |
| RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG                                                                                                                                                |      |          |                 |            |
| AU 2000046142                                                                                                                                                                                                                                                                                                                     | A    | 20010109 | AU 2000-46142   | 20000517   |
| EP 1188742                                                                                                                                                                                                                                                                                                                        | A1   | 20020320 | EP 2000-927796  | 20000517   |
| EP 1188742                                                                                                                                                                                                                                                                                                                        | B1   | 20041215 |                 |            |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO                                                                                                                                                                                                                                         |      |          |                 |            |
| AT 284862                                                                                                                                                                                                                                                                                                                         | T    | 20050115 | AT 2000-927796  | 20000517   |
| US 6919481                                                                                                                                                                                                                                                                                                                        | B1   | 20050719 | US 2001-959754  | 20000517   |
| PRIORITY APPLN. INFO.:                                                                                                                                                                                                                                                                                                            |      |          | JP 1998-206146  | A 19980722 |
|                                                                                                                                                                                                                                                                                                                                   |      |          | JP 1999-177422  | A 19990623 |
|                                                                                                                                                                                                                                                                                                                                   |      |          | JP 1999-242052  | A 19990827 |
|                                                                                                                                                                                                                                                                                                                                   |      |          | WO 2000-JP3170  | W 20000517 |

OTHER SOURCE(S): CASREACT 132:250988; MARPAT 132:250988

ED Entered STN: 04 Apr 2000

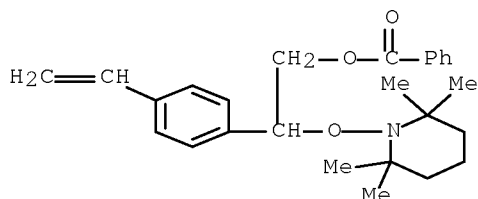
AB R1CO2CH2CH(ONR3R4)C6H4CH:CH2 [R1 = aryl; R2; R2 = C1-12 linear or branched alkyl, cycloalkyl; R3, R4 = C4-6 tertiary alkyl; NR3R4 may form (un)substituted C8-16 ring], useful as polymerization initiators, antioxidants, and scorch inhibitors for polymers (no data), are prepared by heating divinylbenzene with nitroxides and organic peroxides to the thermal decomposition temperature of the peroxides. The products are stable in ionic reactions (no data). OHCH2CH(ONR3R4)C6H4CH:CH2 (R3, R4 = same as above), useful in functional group introduction or as ring-opening polymerization initiators (no data) are prepared by hydrolysis of the above products. 2,2,6,6-Tetramethylpiperidine-1-oxyl was treated with 1,4-divinylbenzene and Bz2O2 at 95° for 3.5 h to give 42.3% PhCO2CH2CH(OZ)C6H4CH:CH2-4 (Z = 2,2,6,6-tetramethylpiperidino).

IT 262616-03-5F

(one-step preparation of vinyl group-containing alkoxyamines as radical generators)

RN 262616-03-5 HCAPLUS

CN Benzeneethanol, 4-ethenyl-β-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]-, benzoate (ester) (9CI) (CA INDEX NAME)



IC ICM C07C239-20  
ICS C07D211-94; C08F004-32  
CC 25-18 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 35, 39, 67  
IT 262616-03-5P 262616-04-6P 262616-05-7P  
262616-06-8P 262616-07-9P 262616-08-0P  
262616-09-1P 262616-10-4P 262616-11-5P  
262616-12-6P 262846-44-6P 262846-45-7P 262846-46-8P  
(one-step preparation of vinyl group-containing alkoxyamines as radical generators)

L68 ANSWER 33 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:208068 HCAPLUS Full-text

DOCUMENT NUMBER: 132:334849

TITLE: A "penultimate" initiator for living free radical polymerization

AUTHOR(S): Skene, W. G.; Scaiano, J. C.; Yap, Glenn P. A.

CORPORATE SOURCE: Department of Chemistry, University of Ottawa, Ottawa, ON, K1N 6N5, Can.

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2000), 41(1), 119-120

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

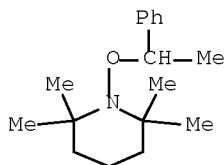
ED Entered STN: 31 Mar 2000

AB To prevent disproportionation reaction of common TEMPO-based initiators (TEMPO = tetramethylpiperidine N-oxide) in living free radical polymerization, a new styrene dimer-connected TEMPO initiator was synthesized. The origins of disproportionation in addition to the kinetic and thermodyn. properties were examined. The 1-(2,2,6,6-tetramethylpiperidine-N-oxide)-1,3-diphenylpropane initiator was studied by absorption spectroscopy after irradiation, determination of rate constant for radical trapping, and activation parameters of thermal decomposition.

IT 154554-67-3P  
(living free radical polymerization kinetics in presence of TEMPO-based initiators)

RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

ST radical polymn modified TEMPO initiator; TEMPO  
diphenylpropane prepn polymn initiator decompn kinetics  
trapping

IT Reaction kinetics  
(homolytic; living free radical polymerization kinetics in presence of  
TEMPO-based initiators)

IT Trapping  
(kinetics; living free radical polymerization kinetics in presence of  
TEMPO-based initiators)

IT Decomposition kinetics  
Rotational energy  
(living free radical polymerization kinetics in presence of TEMPO-based  
initiators)

IT Polymerization catalysts  
(radical; living free radical polymerization kinetics in presence of  
TEMPO-based initiators)

IT 72379-98-7, 1,3-Diphenylpropyl  
(living free radical polymerization kinetics in presence of TEMPO-based  
initiators)

IT 154554-67-3P  
(living free radical polymerization kinetics in presence of TEMPO-based  
initiators)

IT 124251-79-2P  
(preparation of TEMPO-based initiators TEMPO-based  
initiators for living free radical polymerization)

IT 2564-83-2, TEMPO  
(preparation of TEMPO-based initiators TEMPO-based  
initiators for living free radical polymerization)

IT 1081-75-0, 1,3-Diphenylpropane  
(preparation of TEMPO-based initiators TEMPO-based  
initiators for living free radical polymerization)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 34 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:757979 HCAPLUS Full-text

DOCUMENT NUMBER: 132:108432

TITLE: High-Yield Synthesis of Functionalized  
Alkoxyamine Initiators and  
Approach to Well-Controlled Block Copolymers Using  
Them

AUTHOR(S): Miura, Yozo; Hirota, Kenichi; Moto, Hiroaki;  
Yamada, Bunichiro

CORPORATE SOURCE: Department of Applied Chemistry Faculty of  
Engineering, Osaka City University, Sumiyoshi-ku  
Osaka, 558-8585, Japan

SOURCE: Macromolecules (1999), 32(25), 8356-8362

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 01 Dec 1999

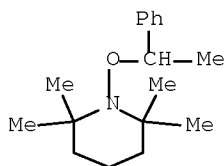
AB Reaction of ethylbenzene, 4-bromo-, 4-(ethoxycarbonyl)-, and 4-methoxyethylbenzenes with di-tert-Bu diperoxyoxalate at 35 °C in the presence of stable nitroxide radicals gave alkoxyamines in 50-91% yields. Lithiation of the 4-bromophenylalkoxyamine and subsequent treatment with DMF gave 4-formylphenylalkoxyamine in 95% yield, and the reduction of the 4-formylphenylalkoxyamine with NaBH<sub>4</sub> yielded 4-(hydroxymethyl)phenylalkoxyamine in 89% yield. Anionic polymerization of butadiene (BD) with sec-BuLi and subsequent termination with 4-formylphenylalkoxyamine gave an end-functionalized poly(butadiene) [poly(BD)]. "Living" radical polymerization of styrene (St) initiated by the functionalized poly(BD) at 120 °C gave a poly(BD)-block-poly(St) with a Mw/Mn of 1.30. Anionic polymerization of hexamethylcyclotrisiloxane (D3) with 4-lithiophenylalkoxyamine gave poly(D3) with an alkoxyamine moiety at a polymer end. "Living" radical polymerization of St initiated by the functionalized poly(D3) gave poly(D3)-block-poly(St) with Mw/Mn's of 1.73-1.80.

IT 154554-67-3P

(high-yield synthesis of functionalized alkoxyamine  
initiators and their use in block polymerization)

RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



CC 35-8 (Chemistry of Synthetic High Polymers)

IT Amines, preparation

(alkoxy-; high-yield synthesis of functionalized  
alkoxyamine initiators and their use in block  
polymerization)

IT Polysiloxanes, preparation

(block copolymers with styrene; high-yield synthesis of  
functionalized alkoxyamine initiators and their  
use in block polymerization)

IT Polymerization catalysts

(high-yield synthesis of functionalized alkoxyamine  
initiators and their use in block polymerization)

IT 154554-67-3P 178625-97-3P 183194-54-9P

209550-19-6P 209550-20-9P 209550-21-0P

209550-24-3P 209550-25-4P

(high-yield synthesis of functionalized alkoxyamine  
initiators and their use in block polymerization)

IT 4748-78-1

(high-yield synthesis of functionalized alkoxyamine  
initiators and their use in block polymerization)

IT 209550-22-1P 209550-23-2P

(high-yield synthesis of functionalized alkoxyamine  
initiators and their use in block polymerization)



initiators and their use in block polymerization)

IT 106107-54-4P, 1,3-Butadiene-styrene block copolymer 109668-88-4P,  
Hexamethylcyclotrisiloxane-styrene block copolymer  
(high-yield synthesis of functionalized alkoxyamine  
initiators and their use in block polymerization)

IT 9003-17-2DP, Polybutadiene, alkoxyamine-terminated 9003-53-6P,  
Polystyrene  
(in block polymer preparation; high-yield synthesis of functionalized  
alkoxyamine initiators and their use in block  
polymerization)

IT 25084-99-5DP, Hexamethylcyclotrisiloxane homopolymer,  
alkoxyamine-terminated  
(in block polymer preparation; high-yield synthesis of functionalized  
alkoxyamine initiators and their use in block  
polymerization)

IT 100-41-4, Ethylbenzene, reactions 1876-22-8 2564-83-2, TEMPO  
(in catalyst preparation; high-yield synthesis of functionalized  
alkoxyamine initiators and their use in block  
polymerization)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 35 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:595167 HCAPLUS Full-text

DOCUMENT NUMBER: 131:229163

TITLE: Nitroxyl derivatives with glycidyl or  
alkylcarbonyl groups as initiators for radical  
polymerization

INVENTOR(S): Fuso, Francesco; Roth, Michael; Wunderlich, Wiebke

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 36 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

| PATENT NO.                                                      | KIND | DATE     | APPLICATION NO.  | DATE     |
|-----------------------------------------------------------------|------|----------|------------------|----------|
| -----                                                           | ---- | -----    | -----            | -----    |
| WO 9946261                                                      | A1   | 19990916 | WO 1999-EP1233   | 19990226 |
| W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ,  |      |          |                  |          |
| DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN,     |      |          |                  |          |
| IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD,     |      |          |                  |          |
| MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,     |      |          |                  |          |
| SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW              |      |          |                  |          |
| RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, |      |          |                  |          |
| DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,     |      |          |                  |          |
| CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG              |      |          |                  |          |
| TW 495515                                                       | B    | 20020721 | TW 1999-88100735 | 19990118 |
| CA 2321792                                                      | A1   | 19990916 | CA 1999-2321792  | 19990226 |
| AU 9929296                                                      | A    | 19990927 | AU 1999-29296    | 19990226 |
| EP 1071681                                                      | A1   | 20010131 | EP 1999-910286   | 19990226 |
| EP 1071681                                                      | B1   | 20060830 |                  |          |
| R: BE, DE, ES, FR, GB, IT, NL                                   |      |          |                  |          |
| JP 2002506070                                                   | T    | 20020226 | JP 2000-535640   | 19990226 |
| IN 1999MA00275                                                  | A    | 20070511 | IN 1999-MA275    | 19990308 |
| US 6566468                                                      | B1   | 20030520 | US 2000-623547   | 20000905 |
| MX 2000PA08767                                                  | A    | 20010328 | MX 2000-PA8767   | 20000908 |
| US 2002107397                                                   | A1   | 20020808 | US 2001-13884    | 20011211 |

10/519,030

|                        |    |          |                |             |
|------------------------|----|----------|----------------|-------------|
| US 6683142             | B2 | 20040127 |                |             |
| US 2003220423          | A1 | 20031127 | US 2003-422497 | 20030424    |
| US 6927295             | B2 | 20050809 |                |             |
| US 2005131177          | A1 | 20050616 | US 2005-35915  | 20050114    |
| PRIORITY APPLN. INFO.: |    |          | EP 1998-810194 | A 19980309  |
|                        |    |          | EP 1998-810531 | A 19980611  |
|                        |    |          | WO 1999-EP1233 | W 19990226  |
|                        |    |          | US 1999-262804 | A3 19990304 |
|                        |    |          | US 2001-13884  | A3 20011211 |
|                        |    |          | US 2003-422497 | A3 20030424 |

OTHER SOURCE(S): MARPAT 131:229163

ED Entered STN: 21 Sep 1999

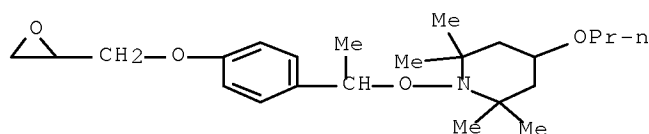
AB Cyclic and linear nitroxyl derivs. having glycidyl or alkylcarbonyl groups attached to the O of the nitroxyl group such as are useful as initiators for radical polymerization of ethylenically unsatd. monomers to give polymers with narrow polydispersity at high monomer conversion, relatively low temps., and short reaction times. A typical initiator was manufactured by adding a solution containing 50 g 2-(4-ethylphenoxyethyl)oxirane (I) and 26.4 g tert-Bu hydroperoxide in 30 min to a mixture containing I 57, 4-propoxy-2,2,6,6-tetramethylpiperidine 1-oxyl 10.7, and MoO<sub>3</sub> 0.72 g at 70° with stirring, reducing the pressure to 200 millibar, and heating 18 h at 100°.

IT 243972-01-2P

(nitroxyl derivs. with glycidyl or alkylcarbonyl groups as initiators for radical polymerization)

RN 243972-01-2 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-[1-[4-(oxiranylmethoxy)phenyl]ethoxy]-4-propoxy- (9CI) (CA INDEX NAME)



IC ICM C07D405-12

ICS C07D211-94; C08F004-00

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 23, 27

IT 243972-01-2P 243972-02-3P 243972-03-4P

243972-04-5P 243972-05-6P 243972-06-7P

243972-07-8P 243972-08-9P 243972-10-3P

243972-11-4P 243972-12-5P 243972-13-6P

243972-14-7P 243972-15-8P 243972-16-9P

243972-17-0P 243972-18-1P

(nitroxyl derivs. with glycidyl or alkylcarbonyl groups as initiators for radical polymerization)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 36 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:317797 HCAPLUS Full-text

DOCUMENT NUMBER: 131:102577

TITLE: Synthesis and characterization of

$\omega$ -unsaturated poly(styrene-*b*-*n*-butyl  
methacrylate) block copolymers using  
TEMPO-mediated controlled radical polymerization

AUTHOR(S): Burguiere, Carine; Dourges, Marie-Anne; Charleux, Bernadette; Vairon, Jean-Pierre

CORPORATE SOURCE: Laboratoire de Chimie Macromoleculaire, Unite  
Mixte associee au CNRS UMR 7610, Universite Pierre  
et Marie Curie, Paris, 75252, Fr.

SOURCE: Macromolecules (1999), 32(12), 3883-3890

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 25 May 1999

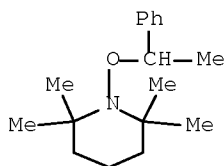
AB Bu methacrylate has been polymerized in bulk at 130°C in the presence of given  
amts. of a nitroxide stable free radical (TEMPO = 2,2,6,6-  
tetramethylpiperidine-N-oxyl) using either a low mol. weight alkoxyamine  
initiator [2,2,6,6-tetramethyl-1-(1-phenethyloxy)piperidine] or a TEMPO-  
capped polystyrene macroinitiator. Complete consumption of both initiators was  
always observed. In contrast, very low final monomer conversions were found.  
Proton NMR spectroscopy and MALDI-TOF mass spectrometry were used for  
investigation of the polymer structure. They showed that the formed poly(Bu  
methacrylate) had the attached initiator at one end and that a block copolymer  
was synthesized when the polystyrene macroinitiator was used. The other  
terminal functionality of the polymer was not a TEMPO-based alkoxyamine but a  
methylene unsatn. exclusively. Particularly, no saturated polymer which would  
also be formed by conventional disproportionation reaction between two  
propagating radicals could be detected. From this result, it was concluded  
that the main chain-breaking event is the  $\beta$ -hydrogen transfer from a  
propagating radical to TEMPO (also called disproportionation reaction). The  
initial concentration of added TEMPO was shown to directly influence the  
poly(Bu methacrylate) block length independently of the initial concentration  
of alkoxyamine: the larger the concentration of TEMPO, the shorter the block  
length. The rate constant of disproportionation was calculated to be  $k_{dis} =$   
 $1.4 \times 10^6 \text{ L mol}^{-1} \text{ s}^{-1}$  at 130 °C.

IT 154554-67-3

(diblock polymer preparation using TEMPO-mediated controlled radical  
polymerization)

RN 154554-67-3 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(1-phenylethoxy)- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT 2564-83-2 154554-67-3

(diblock polymer preparation using TEMPO-mediated controlled radical

polymerization)

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 37 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:211299 HCAPLUS Full-text

DOCUMENT NUMBER: 130:352729

TITLE: Novel methods for the fabrication of well-defined  
and patterned polymer brushesAUTHOR(S): Benoit, Didier; Husemann, Marc; Mecerreyes, David;  
Morrison, Michael; Hinsberg, William; Hawker,  
Craig J.; Hedrick, James L.; Shah, Rahul; Abbott,  
Nicholas L.CORPORATE SOURCE: IBM Almaden Research Center, San Jose, CA,  
95120-6099, USASOURCE: Polymer Preprints (American Chemical Society,  
Division of Polymer Chemistry) (1999), 40(1),  
498-499

CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer  
Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 05 Apr 1999

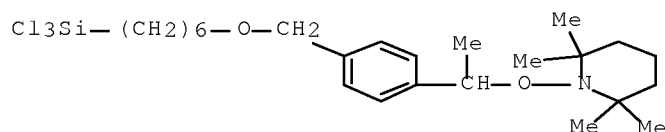
AB Strategies were developed for the preparation of patterned polymer brushes,  
either isolated structures from microcontact printed Au surfaces, or chemical  
patterning of continuous brush structures using lithog. techniques. A non-  
reactive self-assembled monolayer [SAM] of CH<sub>3</sub>(CH<sub>2</sub>)<sub>15</sub>SH is microcontact  
printed onto a gold surface, then HO(CH<sub>2</sub>CH<sub>2</sub>O)<sub>2</sub>(CH<sub>2</sub>)<sub>11</sub>SH was selectively  
assembled onto the bare regions of the gold surface. The final step is  
surface initiated ring opening polymerization of  $\epsilon$ -caprolactone or  
polymerization of other monomers from the functionalized areas of the  
patterned SAM based on the hydroxyl groups as initiators. Another strategy  
involves the patterning of a continuous polymer brush into areas of  
hydrophilic and hydrophobic chains; an alkoxyamine initiator can be readily  
hydrosilylated with trichlorosilane to obtain the trichlorosilyl derivative  
This derivative can be attached to a variety of surfaces, e.g., native silicon  
oxide layer of silicon wafers by reaction with the surface silanol groups.  
Polymer brushes can then be grown on the functionalized surface from vinyl  
monomers. Patterning of polymer brushes involved spin coating a photoresist  
layer on the polymer brush, exposure of the photoresist to deep-UV irradiation  
through a mask, forming a photoacid that diffuses to the polymer brush.  
Removal of the photoresist led to the patterned brush.

IT 225229-07-2F

(novel methods for fabrication of well-defined and patterned  
polymer brushes)

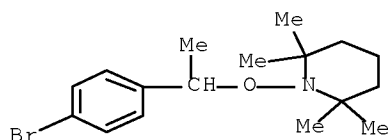
RN 225229-07-2 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-[1-[4-[[[6-  
(trichlorosilyl)hexyl]oxy)methyl]phenyl]ethoxy]- (CA INDEX NAME)



CC 35-7 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 36  
 IT 225229-07-2P  
 (novel methods for fabrication of well-defined and patterned  
 polymer brushes)  
 IT 821-41-0, Hex-5-en-1-ol 10025-78-2, Trichlorosilane  
 212132-38-2  
 (novel methods for fabrication of well-defined and patterned  
 polymer brushes)  
 IT 225229-06-1P  
 (novel methods for fabrication of well-defined and patterned  
 polymer brushes)  
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L68 ANSWER 38 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1999:211107 HCAPLUS Full-text  
 DOCUMENT NUMBER: 130:352602  
 TITLE: Preparation of alkoxyamine  
 initiators carrying a functional group  
 AUTHOR(S): Miura, Yozo; Hirota, Kenichi; Moto, Hiroaki;  
 Yamada, Bunichiro  
 CORPORATE SOURCE: Department of Applied Chemistry, Faculty of  
 Engineering, Osaka City University, Osaka,  
 558-8585, Japan  
 SOURCE: Polymer Preprints (American Chemical Society,  
 Division of Polymer Chemistry) (1999), 40(1),  
 123-124  
 CODEN: ACPPAY; ISSN: 0032-3934  
 PUBLISHER: American Chemical Society, Division of Polymer  
 Chemistry  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 05 Apr 1999  
 AB Alkoxyamines useful as catalysts for living radical polymerization are  
 prepared in high yields by the reaction of ethylbenzene with di-tert-Bu  
 peroxalate at 35° in the presence of stable nitroxides such as TEMPO and di-  
 tert-Bu nitroxide. By using this procedure functionalized alkoxyamines  
 including p-bromo substituted alkoxyamine were also prepared in high yield.  
 Furthermore, p-Formyl and p-hydroxymethyl substituted alkoxyamines were  
 obtained from the p-bromo substituted alkoxyamine.  
 IT 178625-97-3P  
 (catalysts; preparation of alkoxyamine initiators  
 for living radical polymerization)  
 RN 178625-97-3 HCAPLUS  
 CN Piperidine, 1-[1-(4-bromophenyl)ethoxy]-2,2,6,6-tetramethyl- (CA  
 INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)  
 IT Polymerization catalysts  
 Polymerization catalysts  
 (living, radical; preparation of alkoxyamine  
 initiators containing functional group)  
 IT 178625-97-3P 209550-20-9P 209550-21-0P  
 209550-22-1P 209550-23-2P 209550-24-3P  
 (catalysts; preparation of alkoxyamine initiators  
 for living radical polymerization)  
 IT 68-12-2, DMF, reactions 100-41-4, Ethylbenzene, reactions  
 594-19-4, tert-Butyllithium 1876-22-8, Di-tert-butyl peroxalate  
 2406-25-9, Di-tert-butyl nitroxide 2564-83-2, TEMPO 3229-53-6,  
 2,2,5,5-Tetramethylpyrrolidinyl-1-oxyl  
 (in preparation of alkoxyamine initiators for living  
 radical polymerization)  
 IT 9003-53-6P, Polystyrene  
 (preparation of in presence of alkoxyamine initiators  
 )

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L68 ANSWER 39 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:87261 HCAPLUS Full-text

DOCUMENT NUMBER: 130:237921

TITLE: Direct Synthesis of Dispersed Nanocomposites by in  
 Situ Living Free Radical Polymerization Using a  
 Silicate-Anchored Initiator

AUTHOR(S): Weimer, Marc W.; Chen, Hua; Giannelis, Emmanuel  
 P.; Sogah, Dotsevi Y.

CORPORATE SOURCE: Department of Chemistry and Chemical Biology Baker  
 Laboratory Department of Materials Science and  
 Engineering, Cornell University, Ithaca, NY,  
 14853, USA

SOURCE: Journal of the American Chemical Society (1999),  
 121(7), 1615-1616

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

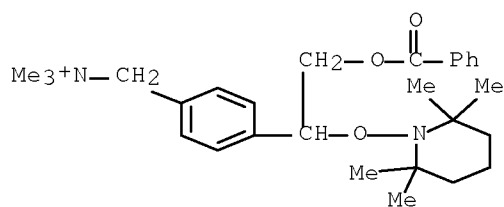
ED Entered STN: 11 Feb 1999

AB Anchoring a living free radical polymerization (LFRP) initiator inside the  
 galleries of layered silicate hosts followed by intercalation and  
 polymerization of styrene gives directly dispersed polystyrene(PS)-silicate  
 nanocomposite. The initiator was prepared and ion-exchanged onto a com.  
 montmorillonite layered silicate to obtain the intercalated species. The LFRP  
 was carried out by heating a dispersion of the intercalated initiator species  
 in styrene for 4 h; the system solidified completely to yield the  
 nanocomposite of silicate randomly dispersed spatially and directionally in  
 the polystyrene matrix consisting of small domains. This level of uniform  
 dispersion is not achievable by either melt or solution intercalation of a  
 preformed polystyrene. The polymer was desorbed from the silicate by  
 refluxing the nanocomposite in THF/LiBr; the low polydispersity index (PDI) of  
 1.3 and the agreement between the calculated number-average mol. weight (Mn)  
 of 24 400 and observed Mn of 21 500, indicate a remarkably well-behaved  
 reaction even under such heterogeneous conditions.

IT 221362-46-5P

(radical initiator; preparation of radical initiator  
 for synthesis of dispersed silicate-polystyrene nanocomposites)

RN 221362-46-5 HCAPLUS  
 CN Benzenemethanaminium, 4-[2-(benzoyloxy)-1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]-N,N,N-trimethyl-, chloride (9CI) (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 37, 57  
 ST polystyrene layered silicate hybrid nanocomposite anchoring  
 initiator  
 IT Polymerization  
 Polymerization catalysts  
 (radical; synthesis of dispersed nanocomposites by in situ living  
 free radical polymerization using silicate-anchored initiator)  
 IT Dispersion (of materials)  
 Hybrid organic-inorganic materials  
 Intercalation  
 Ion exchange  
 Polydispersity  
 (synthesis of dispersed nanocomposites by in situ living free  
 radical polymerization using silicate-anchored initiator)  
 IT 9003-53-6P  
 (nanocomposites; synthesis of dispersed nanocomposites by in situ  
 living free radical polymerization using silicate-anchored  
 initiator)  
 IT 75-50-3, reactions  
 (preparation of radical initiator for synthesis of dispersed  
 silicate-polystyrene nanocomposites)  
 IT 221362-46-5P  
 (radical initiator; preparation of radical initiator  
 for synthesis of dispersed silicate-polystyrene nanocomposites)  
 IT 216104-33-5  
 (radical initiator; preparation of radical initiator  
 for synthesis of dispersed silicate-polystyrene nanocomposites)  
 IT 1318-93-0, Montmorillonite, uses  
 (support and nanocomposite component; synthesis of dispersed  
 nanocomposites by in situ living free radical polymerization using  
 silicate-anchored initiator)  
 REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L68 ANSWER 40 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1999:76038 HCAPLUS Full-text  
 DOCUMENT NUMBER: 130:237911

TITLE: Controlled Synthesis of Polymer Brushes by  
"Living" Free Radical Polymerization Techniques

AUTHOR(S): Husseman, Marc; Malmstroem, Eva E.; McNamara,  
Molly; Mate, Mathew; Mecerreyes, David; Benoit,  
Didier G.; Hedrick, James L.; Mansky, Paul; Huang,  
E.; Russell, Thomas P.; Hawker, Craig J.

CORPORATE SOURCE: Center for Polymeric Interfaces and Macromolecular  
Assemblies, IBM Almaden Research Center, San Jose,  
CA, 95120-6099, USA

SOURCE: Macromolecules (1999), 32(5), 1424-1431  
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

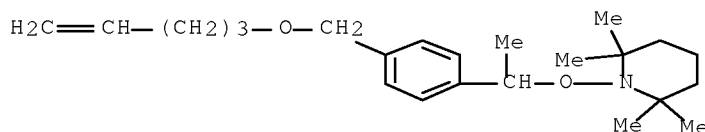
ED Entered STN: 05 Feb 1999

AB The preparation of a wide variety of unique polymer brush structures can be  
accomplished by living free radical polymerization of vinyl monomers from  
surface-tethered alkoxyamines or from tethered  $\alpha$ -halo esters in the presence  
of  $(PPh_3)_2NiBr_2$ . The use of a living free radical process permits the mol.  
weight and polydispersity of the covalently attached polymer chains to be  
accurately controlled while also allowing the formation of block copolymers by  
the sequential growth of monomers from the surface. These block and random  
copolymer brushes were used to control surface properties.

IT 212132-49-5P  
(alkoxyamine precursor; controlled synthesis of polystyrene and  
polymethacrylate brushes by living free radical polymerization using  
surface-tethered alkoxyamine initiators)

RN 212132-49-5 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-[1-[4-[(4-  
pentenyloxy)methyl]phenyl]ethoxy]- (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

IT Polymers, preparation  
(brush; controlled synthesis of polystyrene and polymethacrylate  
brushes by living free radical polymerization using surface-tethered  
alkoxyamine initiators)

IT Polymer chains  
(brushes; controlled synthesis of polystyrene and polymethacrylate  
brushes by living free radical polymerization using surface-tethered  
alkoxyamine initiators)

IT Hydrosilylation  
Polydispersity  
(controlled synthesis of polystyrene and polymethacrylate brushes  
by living free radical polymerization using surface-tethered  
alkoxyamine initiators)

IT Polymerization  
Polymerization catalysts  
(radical; controlled synthesis of polystyrene and polymethacrylate  
brushes by living free radical polymerization using surface-tethered



- alkoxyamine initiators)
- IT 212132-49-5P 221318-43-0P  
(alkoxyamine precursor; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 110-05-4, Di-tert-butyl peroxide 16940-66-2, Sodium borohydride 135620-04-1, Jacobsen's catalyst  
(controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 821-09-0, Pent-4-enol 1066-35-9, Dimethylchlorosilane 1592-20-7 2564-83-2, 2,2,6,6-Tetramethylpiperidinyloxy 7646-69-7, Sodium hydride 10025-78-2, Trichlorosilane 212132-38-2  
(controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 9003-53-6P 9011-14-7P, Poly(methyl methacrylate) 26010-51-5P, 2-Hydroxyethyl methacrylate-styrene copolymer 106911-77-7P, Methyl methacrylate-styrene block copolymer  
(controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 600-00-0, Ethyl-2-bromo-2-methylpropionate 154554-67-3  
(controlling initiator; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 212132-48-4P 221318-51-0P  
(intermediate; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 14126-37-5  
(polymerization catalyst; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 821-41-0, 5-Hexen-1-ol 20769-85-1, 2-Bromo-2-methylpropionyl bromide 89359-54-6 161776-41-6, 2-Phenyl-2-[(2,2,6,6-tetramethylpiperidino)oxy]ethanol  
(starting material; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 7631-86-9, Silica, reactions  
(substrate surface reactive layer; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 221318-45-2P 221318-47-4P  
(surface bound initiator; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 221318-53-2P  
(surface-bound initiator; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)
- IT 7440-21-3, Silicon, uses  
(wafer, substrate; controlled synthesis of polystyrene and polymethacrylate brushes by living free radical polymerization using surface-tethered alkoxyamine initiators)

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 41 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:509835 HCAPLUS Full-text

DOCUMENT NUMBER: 129:216942

TITLE: Meisenheimer Rearrangement of Allyl N-Oxides as a Route to Initiators for Nitroxide-Mediated "Living" Free Radical Polymerizations

AUTHOR(S): Bergbreiter, David E.; Walchuk, Brian

CORPORATE SOURCE: Department of Chemistry, Texas A&M University, College Station, TX, 77842, USA

SOURCE: Macromolecules (1998), 31(18), 6380-6382  
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 18 Aug 1998

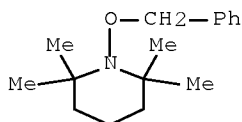
AB A new method was developed for preparing unimol. initiators for the living radical polymerization of styrene based on the oxidation and Meisenheimer rearrangement of allylic N-oxide derivs. of 2,2,6,6-tetramethylpiperidine. The N-allyl derivs. of 2,2,6,6-tetramethylpiperidine were oxidized to the corresponding N-oxide by treatment with m-chloroperbenzoic acid. This product spontaneously rearranges under the reaction conditions to give O-allyl TEMPO derivs. The TEMPO derivs. were evaluated as catalysts for the living radical polymerization of styrene.

IT 102261-92-7F

(polymerization catalyst; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)

RN 102261-92-7 HCAPLUS

CN Piperidine, 2,2,6,6-tetramethyl-1-(phenylmethoxy)- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 27

ST Meisenheimer rearrangement allyloxy TEMPO deriv prepn; polymn catalyst allyloxy TEMPO deriv prepn; styrene living radical polymn catalyst

IT Rearrangement

(Meisenheimer; in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)

IT Polymerization

(living, radical, kinetics; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)

IT Polymerization

Polymerization

(living, radical, mechanism; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)

IT Polymerization catalysts

Polymerization catalysts

## Polymerization kinetics

(living, radical; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)

- IT 9003-53-6P, Polystyrene  
(Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)
- IT 783-76-6P, 1-Benzyl-2,2,6,6-Tetramethylpiperidine 54262-93-0P,  
1-Allyl-2,2,6,6-Tetramethylpiperidine 204905-80-6P 204905-84-0P  
(catalyst intermediate; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)
- IT 100-39-0, Benzyl bromide 106-95-6, Allyl bromide, reactions  
768-66-1, 2,2,6,6-Tetramethylpiperidine 870-63-3, Prenyl bromide  
4392-24-9, Cinnamyl bromide  
(catalyst starting material; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)
- IT 100-42-5, processes  
(kinetics and polymerization mechanism; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)
- IT 212576-03-9P  
(polymerization catalyst byproduct; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)
- IT 102261-92-7P 131531-08-3P 131749-90-1P 204906-02-5P  
(polymerization catalyst; Meisenheimer rearrangement in preparation of allyloxy TEMPO derivs. for polymerization catalysts for styrene living radical polymerization)

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 42 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:503834 HCAPLUS Full-text

DOCUMENT NUMBER: 129:203301

TITLE: A versatile and efficient synthesis of alkoxyamine  
LFR initiators via manganese based asymmetric  
epoxidation catalysts

AUTHOR(S): Dao, Julian; Benoit, Didier; Hawker, Craig J.

CORPORATE SOURCE: Center for Polymeric Interfaces and Macromolecular  
Assemblies, IBM Research Division, Almaden  
Research Center, San Jose, CA, 95120-6099, USA

SOURCE: Journal of Polymer Science, Part A: Polymer  
Chemistry (1998), 36(12), 2161-2167  
CODEN: JPACEC; ISSN: 0887-624X

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

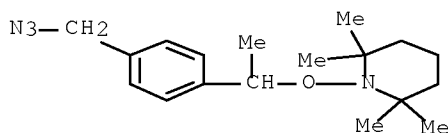
ED Entered STN: 14 Aug 1998

AB Styrene derivs. were treated with TEMPO in the presence of manganese complex  
epoxidn. catalysts to give piperidine ethers that were useful as living free  
radical polymerization catalysts.

IT 212132-52-0P  
(synthesis of alkoxyamine living free radical polymerization initiators  
via manganese-based asym. epoxidn. catalysts)

RN 212132-52-0 HCAPLUS

CN Piperidine, 1-[1-[4-(azidomethyl)phenyl]ethoxy]-2,2,6,6-tetramethyl-  
(CA INDEX NAME)



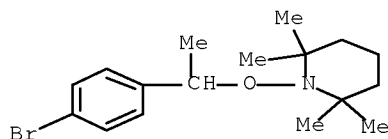
CC 35-3 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 27  
 IT 212132-52-0P  
 (synthesis of alkoxyamine living free radical polymerization initiators  
 via manganese-based asym. epoxidn. catalysts)  
 IT 178625-98-4P 184646-30-8P 209550-21-0P  
 209550-24-3P 212132-38-2P 212132-39-3P  
 212132-40-6P 212132-41-7P 212132-43-9P  
 212132-45-1P 212132-47-3P 212132-49-5P  
 212132-50-8P 212132-51-9P 212132-53-1P  
 (synthesis of alkoxyamine living free radical polymerization initiators  
 via manganese-based asym. epoxidn. catalysts)  
 REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L68 ANSWER 43 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1998:411135 HCAPLUS Full-text  
 DOCUMENT NUMBER: 129:95758  
 TITLE: High-Yield Synthesis of Alkoxyamine  
 Initiators Carrying a Functional Group by  
 Reaction of Ethylbenzenes with Di-tert-butyl  
 Diperoxalate in the Presence of Nitroxides  
 AUTHOR(S): Miura, Yozo; Hirota, Kenichi; Moto, Hiroaki;  
 Yamada, Bunichiro  
 CORPORATE SOURCE: Department of Applied Chemistry, Faculty of  
 Engineering, Osaka City University, Osaka,  
 558-8585, Japan  
 SOURCE: Macromolecules (1998), 31(14), 4659-4661  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 08 Jul 1998

AB The reaction of ethylbenzenes with di-tert-Bu diperoxalate in the presence of  
 nitroxides at 35° gives alkoxyamines, including 4-bromo, 4-ethoxycarbonyl, and  
 4-methoxy derivs. in good yields. Bulk polymerization of styrene initiated by  
 4-ethoxycarbonyl alkoxyamines was carried out at 120°. The polydispersity of  
 polystyrene obtained is <1.3, indicating that these functionalized  
 alkoxyamines can be used for the syntheses of controlled macromol.  
 architectures.

IT 178625-97-3P  
 (preparation of alkoxyamine initiators from  
 ethylbenzenes with t-bu-diperoxalate and nitroxides and use in  
 controlled styrene polymerization)

RN 178625-97-3 HCAPLUS  
 CN Piperidine, 1-[1-(4-bromophenyl)ethoxy]-2,2,6,6-tetramethyl- (CA  
 INDEX NAME)



- CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 27, 67
- ST alkoxyamine prepn radical polymn initiator; styrene polymn  
ethoxycarbonyl alkoxyamine initiator
- IT Polydispersity  
(preparation of alkoxyamine initiators from  
ethylbenzenes with t-bu-diperoxalate and nitroxides and use in  
controlled styrene polymerization)
- IT Polymerization catalysts  
(radical; preparation of alkoxyamine initiators from  
ethylbenzenes with t-bu-diperoxalate and nitroxides and use in  
controlled styrene polymerization)
- IT 178625-97-3P  
(preparation of alkoxyamine initiators from  
ethylbenzenes with t-bu-diperoxalate and nitroxides and use in  
controlled styrene polymerization)
- IT 154554-67-3P, 2,2,6,6-Tetramethyl-1-(1-phenylethoxy)piperidine  
209550-19-6P 209550-20-9P 209550-21-0P  
209550-24-3P  
(preparation of alkoxyamine initiators from  
ethylbenzenes with t-bu-diperoxalate and nitroxides and use in  
controlled styrene polymerization)
- IT 68-12-2, DMF, reactions 100-41-4, Ethylbenzene, reactions 594-19-4  
2406-25-9, DTBN 2564-83-2, TEMPO 3141-58-0, tert-Butoxyl radical  
3229-53-6, Proxo 16853-85-3, Lithium aluminum hydride  
183194-54-9  
(preparation of alkoxyamine initiators from  
ethylbenzenes with t-bu-diperoxalate and nitroxides and use in  
controlled styrene polymerization)
- IT 209550-22-1P 209550-23-2P  
(preparation of alkoxyamine initiators from  
ethylbenzenes with t-bu-diperoxalate and nitroxides and use in  
controlled styrene polymerization)
- IT 9003-53-6P, Polystyrene 209550-25-4P  
(preparation of alkoxyamine initiators from  
ethylbenzenes with t-bu-diperoxalate and nitroxides and use in  
controlled styrene polymerization)
- REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L68 ANSWER 44 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 1997:142814 HCAPLUS Full-text  
DOCUMENT NUMBER: 126:186432  
TITLE: Reactions of the "stable" nitroxide radical TEMPO.  
Relevance to "living" free radical polymerizations  
and autopolymerization of styrene  
AUTHOR(S): Connolly, Terrence J.; Scaiano, J. C.  
CORPORATE SOURCE: Department of Chemistry, University of Ottawa,  
Ottawa, ON, K1N 6N5, Can.

SOURCE: Tetrahedron Letters (1997), 38(7), 1133-1136  
 CODEN: TELEAY; ISSN: 0040-4039  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 05 Mar 1997

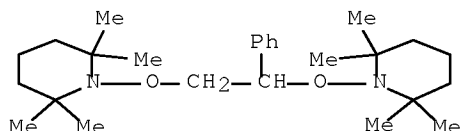
AB The stable nitroxide TEMPO reacts with styrene and polystyrene models under conditions typically used for polymns. These results show that the nitroxide is not inert at the elevated temps. necessary to conduct polymns. The implications of H abstraction and olefin addition by the nitroxide are discussed, particularly as they apply to initiation, control of polydispersity and nitroxide mediated autopolymn. of styrene.

IT 187410-28-2P

(preparation in reaction of styrene with TEMPO)

RN 187410-28-2 HCAPLUS

CN Piperidine, 1,1'-[(1-phenyl-1,2-ethanediyl)bis(oxy)]bis[2,2,6,6-tetramethyl- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)

ST TEMPO mediated living polymn styrene; mechanism TEMPO mediated living polymn styrene; initiator TEMPO living polymn styrene

IT Polymerization

Polymerization catalysts

Polymerization catalysts

(living, radical; mechanism of TEMPO-mediated living autopolymn. of styrene)

IT 187410-28-2P

(preparation in reaction of styrene with TEMPO)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L68 ANSWER 45 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1991:492290 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 115:92290

TITLE: Preparation of (aminooxycarbonyl)aryloxypyrimidine s and -arylthiopyrimidines as herbicides

INVENTOR(S): Hiratsuka, Mitsunori; Hirata, Naonori; Saitoh, Kazuo; Shibata, Hideyuki

PATENT ASSIGNEE(S): Sumitomo Chemical Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 80 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

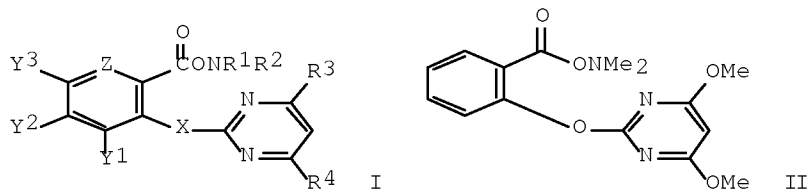
PATENT INFORMATION:

| PATENT NO. | KIND | DATE     | APPLICATION NO. | DATE     |
|------------|------|----------|-----------------|----------|
| EP 426476  | A1   | 19910508 | EP 1990-311985  | 19901101 |

10/519,030

|                                           |    |          |                 |             |
|-------------------------------------------|----|----------|-----------------|-------------|
| EP 426476                                 | B1 | 19940727 |                 |             |
| R: BE, CH, DE, DK, ES, FR, GB, IT, LI, NL |    |          |                 |             |
| US 5125957                                | A  | 19920630 | US 1990-602689  | 19901024    |
| CA 2029027                                | A1 | 19910502 | CA 1990-2029027 | 19901031    |
| AU 9065703                                | A  | 19910509 | AU 1990-65703   | 19901031    |
| AU 629999                                 | B2 | 19921015 |                 |             |
| CN 1051556                                | A  | 19910522 | CN 1990-108773  | 19901031    |
| CN 1028714                                | B  | 19950607 |                 |             |
| HU 55603                                  | A2 | 19910628 | HU 1990-6966    | 19901031    |
| HU 208230                                 | B  | 19930928 |                 |             |
| BR 9005540                                | A  | 19910917 | BR 1990-5540    | 19901031    |
| RU 2029471                                | C1 | 19950227 | RU 1990-4831578 | 19901031    |
| JP 04178371                               | A  | 19920625 | JP 1990-297558  | 19901101    |
| ES 2057437                                | T3 | 19941016 | ES 1990-311985  | 19901101    |
| US 5300640                                | A  | 19940405 | US 1991-810166  | 19911219    |
| AU 9221139                                | A  | 19921022 | AU 1992-21139   | 19920820    |
| AU 644538                                 | B2 | 19931209 |                 |             |
| PRIORITY APPLN. INFO.:                    |    |          | JP 1989-287133  | A 19891101  |
|                                           |    |          | JP 1990-142390  | A 19900530  |
|                                           |    |          | JP 1990-213934  | A 19900810  |
|                                           |    |          | US 1990-602689  | A3 19901024 |

OTHER SOURCE(S): MARPAT 115:92290  
 ED Entered STN: 06 Sep 1991  
 GI

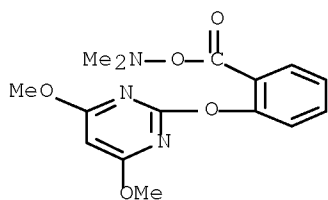


AB Title compds. [I; R1, R2 = H, alkyl, alkenyl, alkynyl, haloalkyl, alkoxyalkyl, alkenyloxyalkyl, alkoxycarbonylalkyl, cyanoalkyl, (CH2)nCONR5R6, (CH2)nS(O)mR7, etc.; R3, R4 = alkyl, alkoxy, haloalkoxy, halo; R5, R6 = H, alkyl, alkenyl, alkynyl; R7 = alkyl, alkenyl, alkynyl; m = 0-2; n = 1-4; Y1-Y3 = H, halo, alkyl, alkoxy; X = O, S; Z = N, CY4; Y4 = H, OH, SH, NO2, halo, alkyl, alkenyl, alkynyl, alkoxy, haloalkyl, cyano, CHO, CO2H, alkoxycarbonyl, (substituted) Ph, PhO, PhS, PhCH2O, PhCH2S, etc.] were prepared. Thus, 2-(4,6-dimethoxypyrimidin-2-yl)oxybenzoic acid, carbonyldiimidazole, and Me2NOH were stirred 12 h in THF/CH2Cl2 to give title compound II. Several I at 0.31 g/a preemergent gave complete control of velvetleaf.

IT 135564-62-4P  
 (preparation of, as herbicide)

RN 135564-62-4 HCAPLUS

CN Methanamine, N-[[2-[(4,6-dimethoxy-2-pyrimidinyl)oxy]benzoyl]oxy]-N-methyl- (9CI) (CA INDEX NAME)



IC ICM C07D239-34  
ICS C07D239-52; C07D239-38; C07D401-12; C07D213-62; C07C239-22;  
C07C323-62; A01N043-54

CC 28-16 (Heterocyclic Compounds (More Than One Hetero Atom))  
Section cross-reference(s): 5

IT 135564-62-4P 135564-63-5P 135564-64-6P 135564-65-7P  
135564-66-8P 135564-67-9P 135564-68-0P  
135564-69-1P 135564-70-4P 135564-71-5P  
135564-72-6P 135564-73-7P 135564-74-8P  
135564-75-9P 135564-76-0P 135564-77-1P  
135564-78-2P 135564-79-3P 135564-80-6P  
135564-81-7P 135564-82-8P 135564-83-9P  
135564-84-0P 135564-85-1P 135564-86-2P 135564-87-3P  
135564-88-4P 135564-89-5P 135564-90-8P 135564-91-9P  
135564-92-0P 135564-93-1P 135564-94-2P 135564-95-3P  
135564-96-4P 135564-97-5P 135564-98-6P 135564-99-7P  
135565-00-3P 135565-01-4P 135565-02-5P 135565-03-6P  
135565-04-7P 135565-05-8P 135565-06-9P  
135565-07-0P 135565-08-1P 135565-09-2P  
135565-10-5P 135565-11-6P 135565-12-7P 135565-13-8P  
135587-60-9P

(preparation of, as herbicide)

IT 135565-14-9P 135565-15-0P 135565-16-1P  
135565-17-2P 135565-18-3P 135565-19-4P  
135565-20-7P 135565-21-8P 135565-22-9P 135565-23-0P  
135565-24-1P 135565-25-2P

(preparation of, as herbicide intermediate)

L68 ANSWER 46 OF 46 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1985:221335 HCAPLUS Full-text

DOCUMENT NUMBER: 102:221335

ORIGINAL REFERENCE NO.: 102:34745a,34748a

TITLE: Free radical polymerization and the produced  
polymers

INVENTOR(S): Solomon, David Henry; Rizzardo, Ezio; Cacioli,  
Paul

PATENT ASSIGNEE(S): Commonwealth Scientific and Industrial Research  
Organization, Australia

SOURCE: Eur. Pat. Appl., 63 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO. | KIND | DATE     | APPLICATION NO. | DATE     |
|------------|------|----------|-----------------|----------|
| -----      | ---- | -----    | -----           | -----    |
| EP 135280  | A2   | 19850327 | EP 1984-304756  | 19840711 |



10/519,030

|                                   |    |          |                |            |
|-----------------------------------|----|----------|----------------|------------|
| EP 135280                         | A3 | 19860813 |                |            |
| EP 135280                         | B1 | 19930512 |                |            |
| R: BE, CH, DE, FR, GB, IT, LI, NL |    |          |                |            |
| AU 8430378                        | A  | 19850117 | AU 1984-30378  | 19830711   |
| AU 571240                         | B2 | 19880414 |                |            |
| JP 60089452                       | A  | 19850520 | JP 1984-144097 | 19840711   |
| JP 05006537                       | B  | 19930126 |                |            |
| US 4581429                        | A  | 19860408 | US 1984-629929 | 19840711   |
| PRIORITY APPLN. INFO.:            |    |          | AU 1983-223    | A 19830711 |
|                                   |    |          | AU 1983-224    | A 19830711 |
|                                   |    |          | AU 1983-225    | A 19830711 |
|                                   |    |          | AU 1984-3578   | A 19840210 |

OTHER SOURCE(S): MARPAT 102:221335

ED Entered STN: 29 Jun 1985

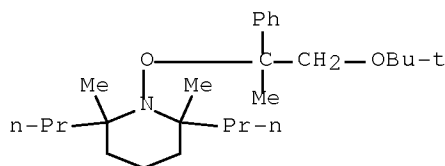
AB Fifteen compds. R1R2R3CN(OX)CR4R5R6 (X = a group having  $\geq 1$  C and is such that the free radical formed by cleavage of the O-X bond is capable of polymerizing unsatd. monomers; R1, R2, R5, and R6 = alkyl or substituted alkyl of sufficient length to provide steric hindrance; R3 and R4 = alkyl, substituted alkyl, or a group which completes a cyclic structure containing the N atom) are prepared and used as initiators for the polymerization, including block and graft polymerization, of unsatd. monomers. The initiators permit control of the growth steps of polymns. to produce oligomeric polymers. Thus, a solution of 400 mg di-tert-butyl nitroxide and 234 mg di-tert-Bu peroxyoxalate [1876-22-8] in 5 mL styrene [100-42-5] was heated 2 h at 50° to prepare N-(2-tert-butyl-1-phenylethoxy)-N,N-di-tert-butylamine (I) [96724-60-6]. A solution of 52 mg I in 3 mL Me acrylate was heated 0.5 h at 100° to prepare 0.42 g polymer Bu3OCH2CHPh[CH2CH(CO2Me)]25ON(CMe3)2.

IT 96724-56-0P

(preparation of, as radical polymerization catalyst)

RN 96724-56-0 HCAPLUS

CN Piperidine, 1-[2-(1,1-dimethylethoxy)-1-methyl-1-phenylethoxy]-2,6-dimethyl-2,6-dipropyl- (CA INDEX NAME)



IC ICM C08F004-00

ICS C08F291-00

CC 35-3 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 27

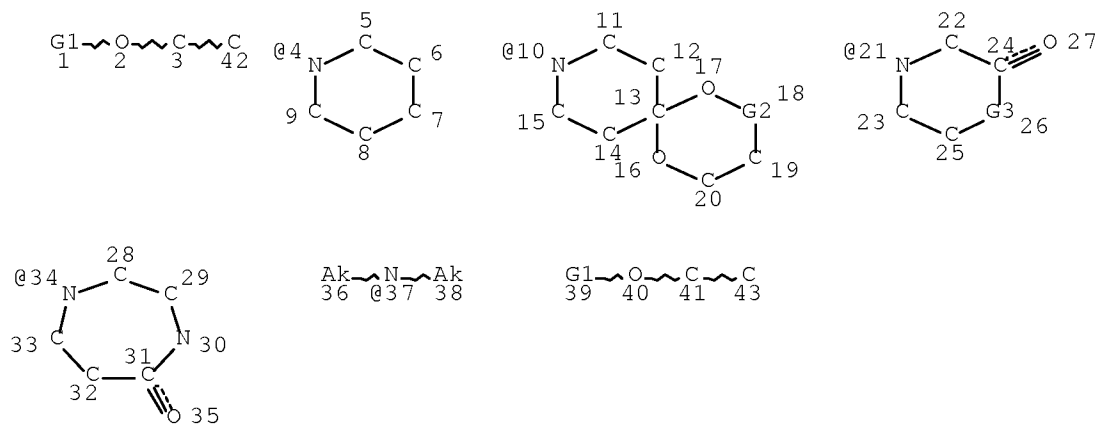
IT 96724-56-0P 96724-57-1P 96724-58-2P

96724-59-3P 96724-60-6P

(preparation of, as radical polymerization catalyst)

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L1 1 SEA FILE=HCAPLUS ABB=ON PLU=ON US20050215691/PN  
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REP G2=(0-1) CH2

VAR G3=O/N

NODE ATTRIBUTES:

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NSPEC IS RC AT 43

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

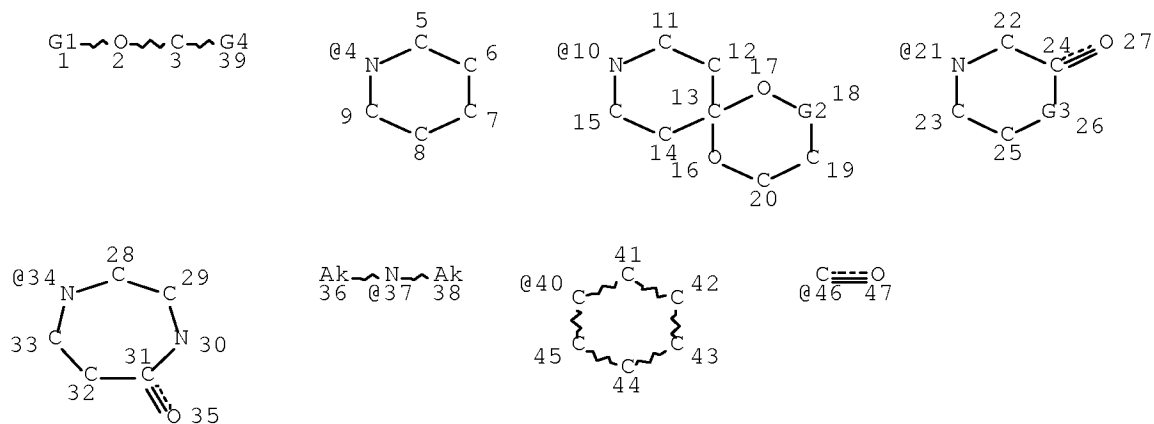
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RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 43

STEREO ATTRIBUTES: NONE

L9 STR



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REP G2=(0-1) CH2

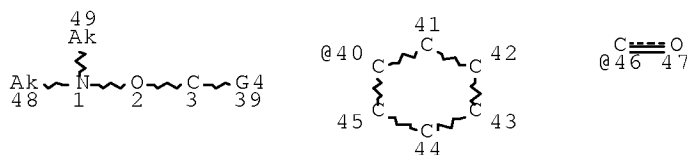
10/519,030

VAR G3=O/N  
VAR G4=46/40  
NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 47

STEREO ATTRIBUTES: NONE

L11 7221 SEA FILE=REGISTRY SSS FUL L9  
L14 694 SEA FILE=REGISTRY SUB=L11 SSS FUL L5  
L17 STR

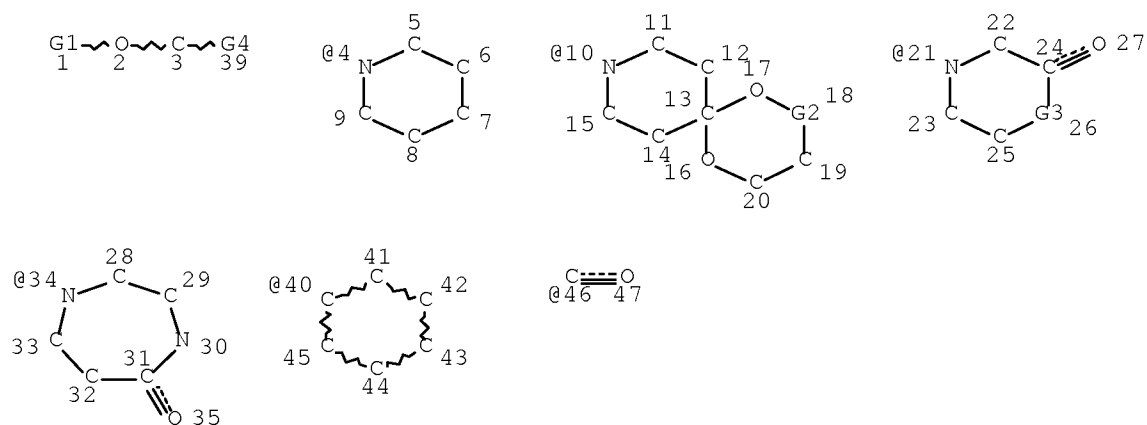


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DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

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NUMBER OF NODES IS 14

STEREO ATTRIBUTES: NONE

L19 240 SEA FILE=REGISTRY SUB=L11 SSS FUL L17  
L21 STR



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VAR G3=O/N  
VAR G4=46/40

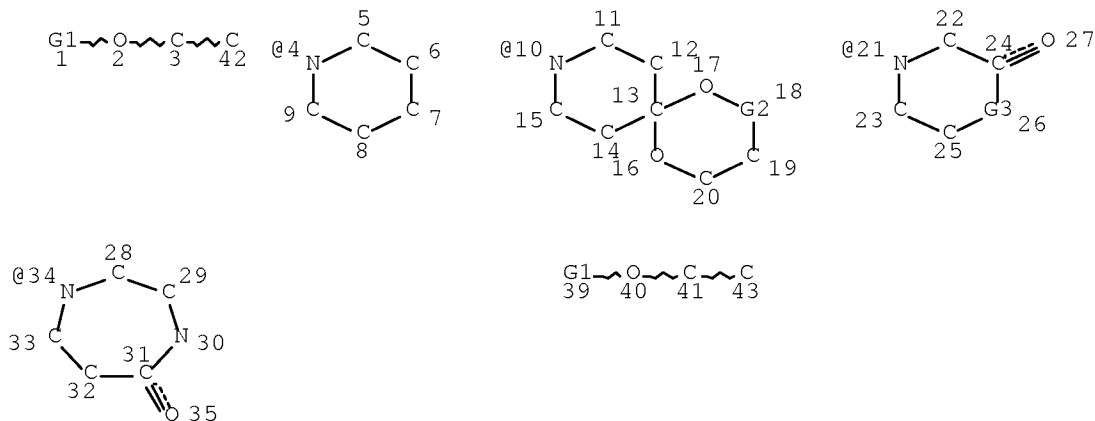
10/519,030

NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 44

STEREO ATTRIBUTES: NONE

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L24 262 SEA FILE=HCAPLUS ABB=ON PLU=ON L14  
L25 144 SEA FILE=HCAPLUS ABB=ON PLU=ON L19  
L29 209 SEA FILE=HCAPLUS ABB=ON PLU=ON L24(L)PREP/RL  
L32 74 SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND (PLASTIC? OR  
POLYMER?)/SC, SX  
L33 60 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND (INITIAT? OR  
CATALYST? OR ACTIVAT?)  
L34 58 SEA FILE=HCAPLUS ABB=ON PLU=ON L33 NOT L19  
L35 STR



VAR G1=4/10/21/34

REP G2=(0-1) CH2

VAR G3=O/N

NODE ATTRIBUTES:

NSPEC IS RC AT 42

NSPEC IS RC AT 43

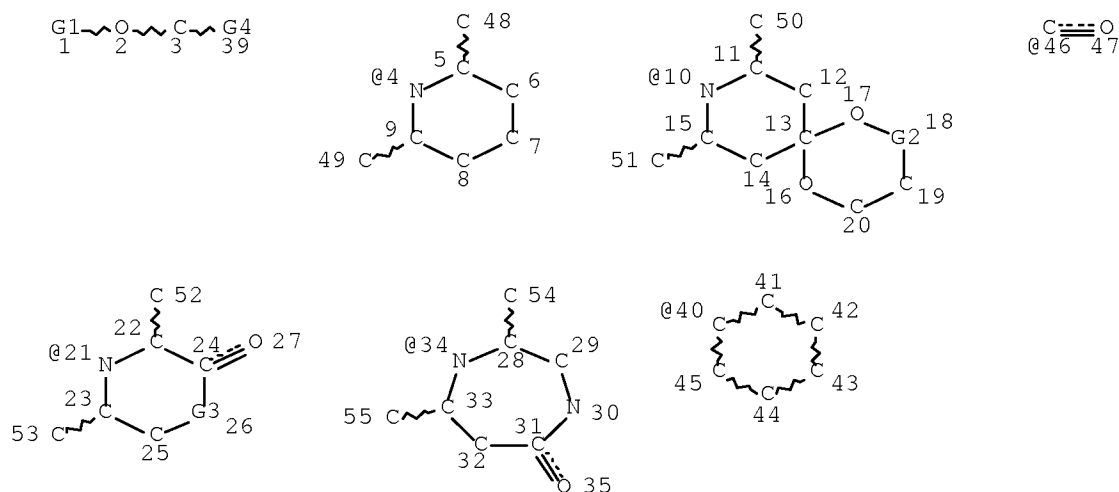
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DEFAULT ECLEVEL IS LIMITED

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RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 40

STEREO ATTRIBUTES: NONE

L37 198 SEA FILE=REGISTRY SUB=L14 SSS FUL L35  
L38 96 SEA FILE=HCAPLUS ABB=ON PLU=ON L37  
L39 40 SEA FILE=HCAPLUS ABB=ON PLU=ON L34 AND L38  
L42 STR



VAR G1=4/10/21/34

REP G2=(0-1) CH2

VAR G3=O/N

VAR G4=46/40

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 52

STEREO ATTRIBUTES: NONE

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| L44 | 1677 | SEA FILE=REGISTRY SUB=L23 SSS FUL L42                                      |
| L45 | 614  | SEA FILE=HCAPLUS ABB=ON PLU=ON L44                                         |
| L46 | 399  | SEA FILE=HCAPLUS ABB=ON PLU=ON L45(L)PREP/RL                               |
| L47 | 271  | SEA FILE=HCAPLUS ABB=ON PLU=ON L46 AND (PLASTIC? OR POLYMER?)/SC, SX       |
| L48 | 208  | SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND (INITIAT? OR CATALYST? OR ACTIVAT?) |
| L49 | 1    | SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND L1                                  |
| L50 | 2    | SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND CLAY?                               |
| L51 | 4    | SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND POF/RL                              |
| L52 | 174  | SEA FILE=HCAPLUS ABB=ON PLU=ON L48 AND CAT/RL                              |
| L53 | 6    | SEA FILE=HCAPLUS ABB=ON PLU=ON L52 AND MOA/RL                              |
| L54 | 15   | SEA FILE=HCAPLUS ABB=ON PLU=ON L52 AND (PEP OR PYP)/RL                     |
| L55 | 22   | SEA FILE=HCAPLUS ABB=ON PLU=ON (L49 OR L50 OR L51) OR (L53 OR L54)         |
| L56 | 13   | SEA FILE=HCAPLUS ABB=ON PLU=ON L25 AND L46                                 |
| L57 | 35   | SEA FILE=HCAPLUS ABB=ON PLU=ON L55 OR L56                                  |
| L58 | 6    | SEA FILE=HCAPLUS ABB=ON PLU=ON L39 AND ALKOXYAMINE INITIATOR?              |
| L59 | 40   | SEA FILE=HCAPLUS ABB=ON PLU=ON L39 OR L58                                  |
| L60 | 5    | SEA FILE=HCAPLUS ABB=ON PLU=ON L57 AND ALKOXYAMINE INITIATOR?              |
| L61 | 35   | SEA FILE=HCAPLUS ABB=ON PLU=ON L57 OR L60                                  |
| L62 | 26   | SEA FILE=HCAPLUS ABB=ON PLU=ON L45 AND ALKOXYAMINE INITIATOR?              |
| L63 | 26   | SEA FILE=HCAPLUS ABB=ON PLU=ON L62 AND (PLASTIC? OR                        |

10/519,030

POLYMER?)/SC, SX  
 L64 56 SEA FILE=HCAPLUS ABB=ON PLU=ON L61 OR L63  
 L65 6 SEA FILE=HCAPLUS ABB=ON PLU=ON L38 AND ALKOXYAMINE  
 INITIATOR?  
 L66 40 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 OR L65  
 L67 10 SEA FILE=HCAPLUS ABB=ON PLU=ON L64 AND L66  
 L69 30 SEA FILE=HCAPLUS ABB=ON PLU=ON L66 NOT L67

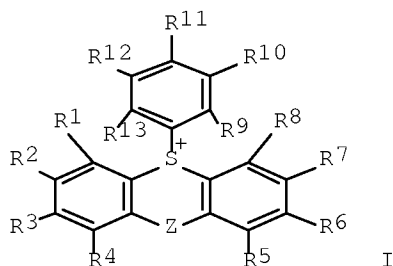
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L69 ANSWER 1 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2007:379556 HCAPLUS Full-text  
 DOCUMENT NUMBER: 146:411508  
 TITLE: Positive-working resist composition containing  
 cationic sulfonium salt and method of forming  
 pattern  
 INVENTOR(S): Hirano, Shuji; Kawanishi, Yasuhiro  
 PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 57pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| -----                  | ---- | -----    | -----           | -----    |
| JP 2007086516          | A    | 20070405 | JP 2005-276396  | 20050922 |
| PRIORITY APPLN. INFO.: |      |          | JP 2005-276396  | 20050922 |

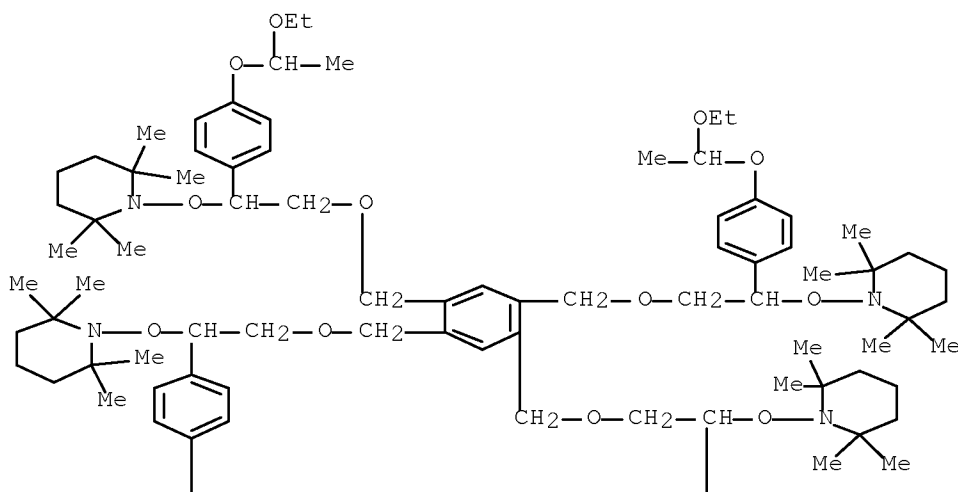
OTHER SOURCE(S): MARPAT 146:411508  
 ED Entered STN: 05 Apr 2007  
 GI



AB Disclosed is a pos.-working resist composition comprising (a) a polymer with  $\geq 3$  polymer chains via  $\geq 1$  branch whose solubility increases upon interaction with an acid and (b) a cationic sulfonium salt represented by I ( $R_1$ - $R_{13}$  = H, substituent; and Z = single or divalent bonding group). The use of the cationic sulfonium salt improved line edge roughness when an electron beam was employed.

IT 933054-46-7P  
 (preparation of polymer for pos.-working resist composition)  
 RN 933054-46-7 HCAPLUS  
 CN Piperidine, 1,1',1'',1'''-[1,2,4,5-benzenetetrayltetrakis[methyleneoxy  
 [1-[(1-ethoxyethoxy)phenyl]-2,1-ethanediyl]oxy]]tetrakis[2,2,6,6-  
 tetramethyl- (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



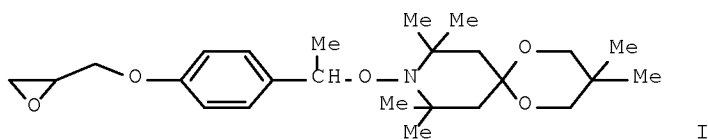
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other  
 Reprographic Processes)  
 Section cross-reference(s): 35, 38, 76  
 IT Polymerization catalysts  
 (preparation of polymer for pos.-working resist composition)  
 IT 933054-46-7P  
 (preparation of polymer for pos.-working resist composition)

L69 ANSWER 2 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:1063135 HCAPLUS Full-text  
 DOCUMENT NUMBER: 145:419613  
 TITLE: Process for the preparation of star polymers via  
 epoxy-functionalized alkoxyamines  
 INVENTOR(S): Fink, Jochen; Pfaendner, Rudolf; Kramer, Andreas;  
 Fuso, Francesco

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.  
 SOURCE: PCT Int. Appl., 23pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-----------------|----------|
| WO 2006106048                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A1   | 20061012 | WO 2006-EP61045 | 20060327 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,<br>CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,<br>GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,<br>KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG,<br>MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT,<br>RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT,<br>TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW<br>RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,<br>IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,<br>BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,<br>TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,<br>ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM<br>CA 2601693 A1 20061012 CA 2006-2601693 20060327<br>EP 1866343 A1 20071219 EP 2006-725315 20060327<br>R: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,<br>IE, IS, IT, LI, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR<br>PRIORITY APPLN. INFO.: EP 2005-102621 A 20050404<br>WO 2006-EP61045 W 20060327 |      |          |                 |          |

ED Entered STN: 12 Oct 2006  
 GI



AB A process for the preparation of star polymers, which are prepared by controlled free radical polymerization using epoxy-functionalized alkoxyamines and multifunctional compds. capable of reacting with the epoxy group. Thus, reaction of 0.01269 mol epoxy alkoxyamine I 9 h at 90° with 0.00423 mol tris(aminomethyl)amine in PhMe and polymerization of 90 g styrene 6 h at 130° in the presence of 2.5 g resulting multifunctional initiator gave star polymer.

IT 912266-01-4F

(initiator; preparation of star polymers via  
 initiators based on adducts of epoxy-functionalized  
 alkoxyamines)

RN 912266-01-4 HCAPLUS

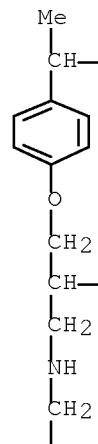
CN 2-Propanol, 1,1',1''-[nitrilotris(2,1-ethanediylimino)]tris[3-[4-[1-



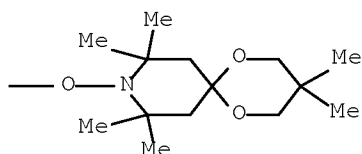
10/519,030

[(3,3,8,8,10,10-hexamethyl-1,5-dioxaspiro[5.5]undec-9-yl)oxy]ethyl]phenoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A

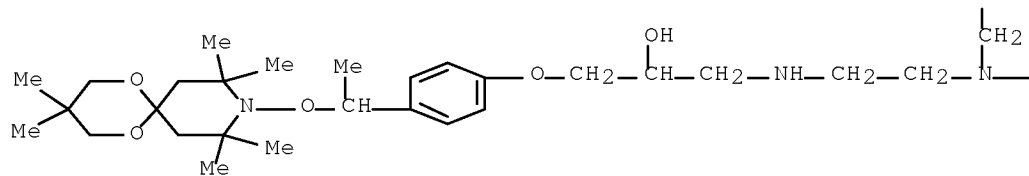


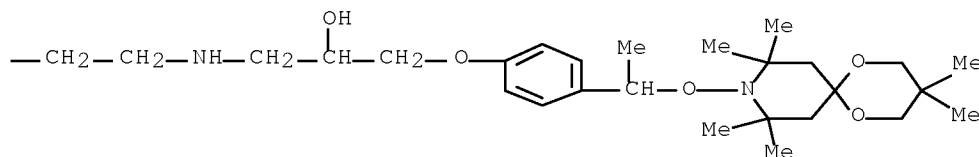
PAGE 1-B



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PAGE 2-A





- CC 35-3 (Chemistry of Synthetic High Polymers)
- ST star shaped vinyl polymer epoxy alkoxyamine adduct initiator  
; trisaminomethylamine glycidyloxyphenylethoxyhexa  
methyldioxyazaspirooundecyloxy adduct initiator styrene  
polymn; controlled free radical polymn initiator vinyl compd
- IT Adhesives  
(preparation of star polymers via initiators based on adducts  
of epoxy-functionalized alkoxyamines for adhesives)
- IT Crosslinking agents  
(preparation of star polymers via initiators based on adducts  
of epoxy-functionalized alkoxyamines for crosslinkers)
- IT Emulsifying agents  
(preparation of star polymers via initiators based on adducts  
of epoxy-functionalized alkoxyamines for emulsifiers)
- IT Ionomers  
(preparation of star polymers via initiators based on adducts  
of epoxy-functionalized alkoxyamines for ionomers)
- IT Polymer blend compatibilizers  
(preparation of star polymers via initiators based on adducts  
of epoxy-functionalized alkoxyamines for polymer blend  
compatibilizers)
- IT Surfactants  
(preparation of star polymers via initiators based on adducts  
of epoxy-functionalized alkoxyamines for surfactants)
- IT Polymerization  
(radical, controlled; preparation of star polymers via  
initiators based on adducts of epoxy-functionalized  
alkoxyamines)
- IT 4097-89-6, Tris(2-aminoethyl)amine 434898-80-3  
(initiator precursor; preparation of star polymers via  
initiators based on adducts of epoxy-functionalized  
alkoxyamines)
- IT 912266-01-4P  
(initiator; preparation of star polymers via  
initiators based on adducts of epoxy-functionalized  
alkoxyamines)
- IT 9003-53-6P, Polystyrene  
(star; preparation of star polymers via initiators based on  
adducts of epoxy-functionalized alkoxyamines)
- REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L69 ANSWER 3 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:146521 HCAPLUS Full-text  
 DOCUMENT NUMBER: 144:351070  
 TITLE: Photoresponsive poly(methyl methacrylate)2-  
 (polystyrene)2 miktoarm star copolymer containing

an azobenzene moiety at the core  
 AUTHOR(S): Erdogan, Tuba; Gungor, Eda; Durmaz, Hakan; Hizal, Gurkan; Tunca, Umit  
 CORPORATE SOURCE: Department of Chemistry, Istanbul Technical University, Maslak, 34469, Turk.  
 SOURCE: Journal of Polymer Science, Part A: Polymer Chemistry (2006), 44(4), 1396-1403  
 CODEN: JPACEC; ISSN: 0887-624X  
 PUBLISHER: John Wiley & Sons, Inc.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 16 Feb 2006

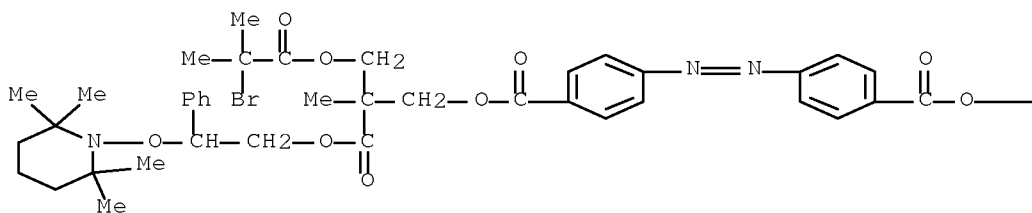
AB We prepared a novel miktoarm star copolymer with an azobenzene unit at the core via combination of atom transfer radical polymerization (ATRP) and nitroxide-mediated free radical polymerization (NMP) routes. For this purpose, first, mikto-functional initiator, 3, with tertiary bromide (for ATRP) and 2,2,6,6-tetramethylpiperidin-1-yloxy (TEMPO) (for NMP) functionalities and an azobenzene moiety at the core was synthesized. The initiator 3 thus obtained was used in the subsequent living radical polymerization routes such as ATRP of MMA and NMP of St, resp., to give A2B2 type miktoarm star copolymer, (PMMA)<sub>2</sub>-(PSt)<sub>2</sub> with an azobenzene unit at the core with controlled mol. weight and low polydispersity ( $M_w/M_n < 1.15$ ). The photoresponsive properties of 3 and (PMMA)<sub>2</sub>-(PSt)<sub>2</sub> miktoarm star copolymer were investigated.

IT 881388-21-2P  
 (initiator; photoresponsive poly(Me methacrylate)<sub>2</sub>-(polystyrene)<sub>2</sub> miktoarm star copolymer containing an azobenzene moiety at core)

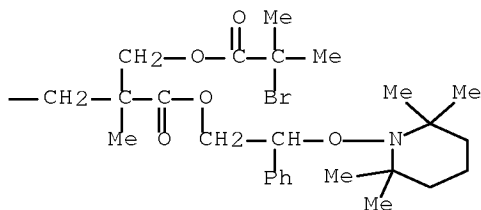
RN 881388-21-2 HCAPLUS

CN Benzoic acid, 4,4'-azobis-, bis[2-[(2-bromo-2-methyl-1-oxopropoxy)methyl]-2-methyl-3-oxo-3-[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyloxy)ethoxy]propyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 881388-22-3P  
 (macroinitiator; photoresponsive poly(Me methacrylate)2-(  
 (polystyrene)2 miktoarm star copolymer containing an azobenzene moiety  
 at core)

RN 881388-22-3 HCAPLUS

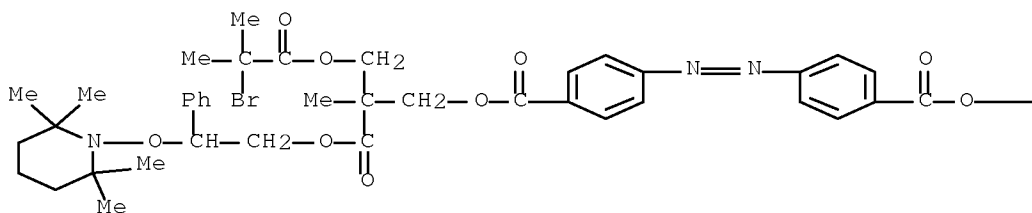
CN Benzoic acid, 4,4'-azobis-, bis[2-[(2-bromo-2-methyl-1-  
 oxopropoxy)methyl]-2-methyl-3-oxo-3-[2-phenyl-2-[(2,2,6,6-tetramethyl-  
 1-piperidinyl)oxy]ethoxy]propyl] ester, telomer with methyl  
 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

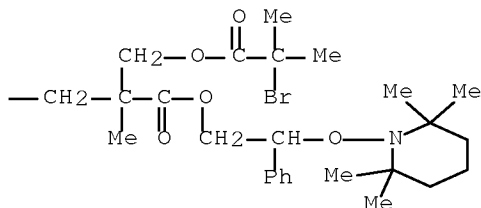
CRN 881388-21-2

CMF C66 H86 Br2 N4 O14

PAGE 1-A



PAGE 1-B



CM 2

CRN 9011-14-7

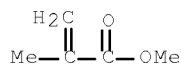
CMF (C5 H8 O2) x

CCI PMS

CM 3

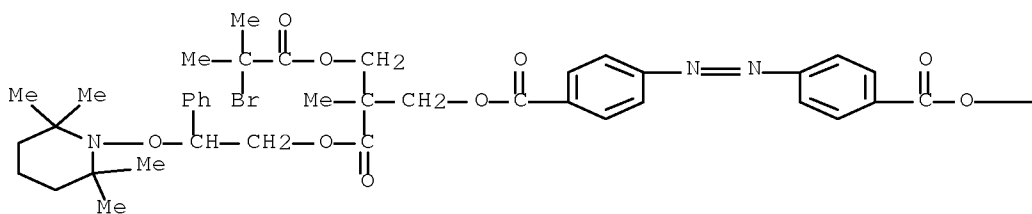
CRN 80-62-6

CMF C5 H8 O2

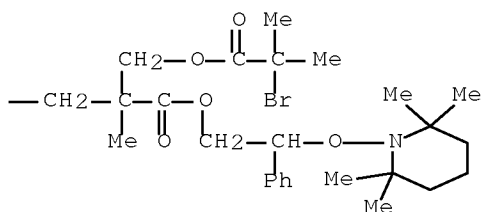


IT 881388-23-4P  
 (star polymer; photoresponsive poly(Me methacrylate)2-(  
 (polystyrene)2 miktoarm star copolymer containing an azobenzene moiety  
 at core)  
 RN 881388-23-4 HCAPLUS  
 CN Benzoic acid, 4,4'-azobis-, bis[2-[(2-bromo-2-methyl-1-  
 oxopropoxy)methyl]-2-methyl-3-oxo-3-[2-phenyl-2-[(2,2,6,6-tetramethyl-  
 1-piperidinyloxy]ethoxy]propyl] ester, telomer with ethenylbenzene  
 and methyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 881388-21-2  
 CMF C66 H86 Br2 N4 O14

PAGE 1-A

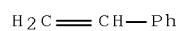


PAGE 1-B



CM 2  
 CRN 25034-86-0  
 CMF (C8 H8 . C5 H8 O2)x  
 CCI PMS

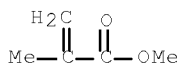
CM 3  
 CRN 100-42-5  
 CMF C8 H8



CM 4

CRN 80-62-6

CMF C5 H8 O2



CC 35-4 (Chemistry of Synthetic High Polymers)

IT Polymerization  
Polymerization catalysts  
(atom transfer, living, radical; photoresponsive poly(Me methacrylate)2-(polystyrene)2 miktoarm star copolymer containing an azobenzene moiety at core)

IT 881388-21-2P  
(initiator; photoresponsive poly(Me methacrylate)2-(polystyrene)2 miktoarm star copolymer containing an azobenzene moiety at core)

IT 881388-22-3P  
(macroinitiator; photoresponsive poly(Me methacrylate)2-(polystyrene)2 miktoarm star copolymer containing an azobenzene moiety at core)

IT 3030-47-5, Pentamethyldiethylenetriamine  
(polymerization catalyst ligand; photoresponsive poly(Me methacrylate)2-(polystyrene)2 miktoarm star copolymer containing an azobenzene moiety at core)

IT 7758-89-6, Copper (I) chloride  
(polymerization catalyst; photoresponsive poly(Me methacrylate)2-(polystyrene)2 miktoarm star copolymer containing an azobenzene moiety at core)

IT 10252-29-6, 4,4'-Bis(chlorocarbonyl)azobenzene 778603-97-7  
(reactant in initiator preparation; photoresponsive poly(Me methacrylate)2-(polystyrene)2 miktoarm star copolymer containing an azobenzene moiety at core)

IT 881388-23-4P  
(star polymer; photoresponsive poly(Me methacrylate)2-(polystyrene)2 miktoarm star copolymer containing an azobenzene moiety at core)

REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 4 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:41766 HCAPLUS Full-text

DOCUMENT NUMBER: 144:293151

TITLE: Syntheses of AB2 3- and AB4 5-miktoarm star copolymers by combination of the anionic ring-opening polymerization of hexamethylcyclotrisiloxane and nitroxide-mediated radical polymerization of styrene

AUTHOR(S): Miura, Yozo; Yamaoka, Keisuke; Mannan, Md. Abdul

CORPORATE SOURCE: Department of Applied Chemistry, Graduate School of Engineering, Osaka City University, Osaka, 558-8585, Japan

SOURCE: Polymer (2006), 47(2), 510-519  
 CODEN: POLMAG; ISSN: 0032-3861  
 PUBLISHER: Elsevier Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

ED Entered STN: 17 Jan 2006

AB AB2 3- and AB4 5-microarm star copolymers were prepared by combination of the anionic ring-opening polymerization (AROP) of hexamethylcyclotrisiloxane (D3) and the TEMPO-mediated radical polymerization of styrene (St). Initially, two kinds of dendritic multifunctional initiators were prepared. One has a 4-bromobutoxy group and two TEMPO-based alkoxyamines and the other has a 4-bromobutoxy group and four TEMPO-based alkoxyamines. Treatment of the multifunctional initiators with tert-butyllithium gave the corresponding lithiobutoxy derivs., and AROP of D3 by the lithiobutoxy derivs. gave poly(D3) with M<sub>w</sub>/M<sub>n</sub> of 1.07-1.12. Nitroxide-mediated radical polymerization of St by the poly(D3)s at 120 °C gave AB2 3- and AB4 5-arm star copolymers with M<sub>w</sub>/M<sub>n</sub> of 1.15-1.28. Their structures were analyzed by means of <sup>1</sup>H NMR and SEC measurements.

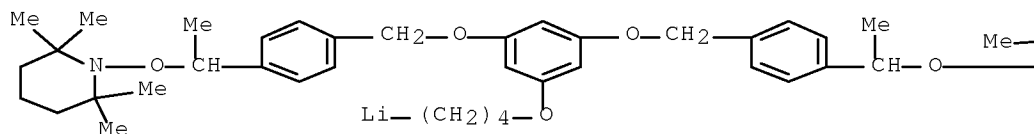
IT 878806-51-0P 878806-53-2P

(syntheses of star copolymers by combination of anionic ring-opening polymerization of hexamethylcyclotrisiloxane and nitroxide-mediated radical polymerization of styrene)

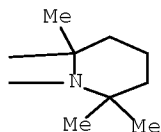
RN 878806-51-0 HCAPLUS

CN Lithium, [4-[3,5-bis[[4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]phenyl]methoxy]phenoxy]butyl]- (CA INDEX NAME)

PAGE 1-A

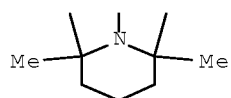
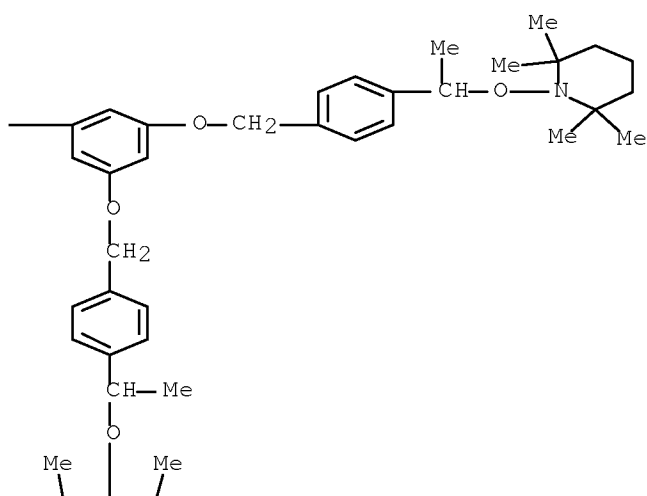
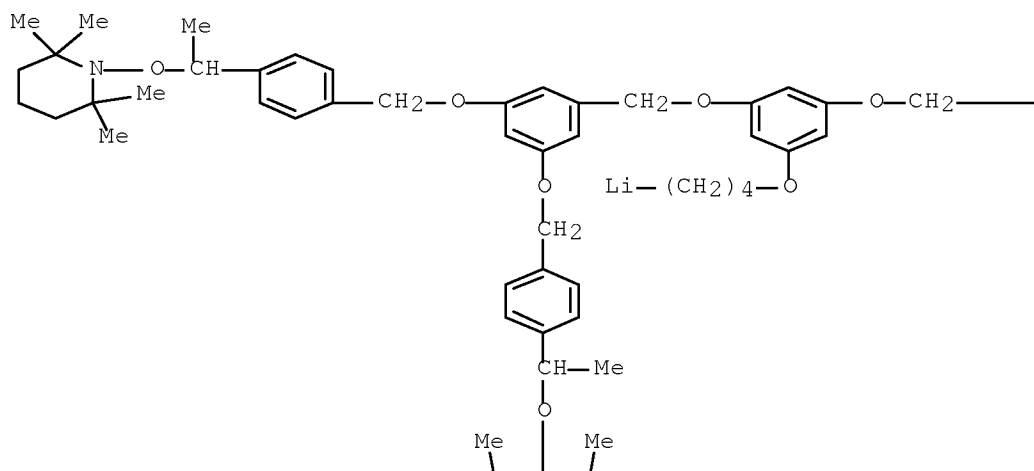


PAGE 1-B



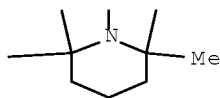
RN 878806-53-2 HCAPLUS

CN Lithium, [4-[3,5-bis[[3,5-bis[[4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]phenyl]methoxy]phenyl]methoxy]phenoxy]butyl]- (CA INDEX NAME)



Me—



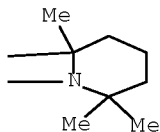
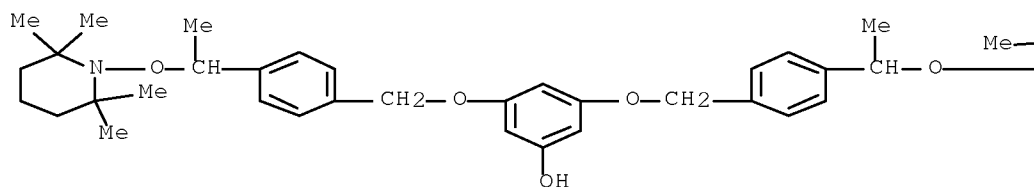


IT 878806-48-5P 878806-49-6P 878806-50-9P  
878806-52-1P

(syntheses of star copolymers by combination of anionic  
ring-opening polymerization of hexamethylcyclotrisiloxane and  
nitroxide-mediated radical polymerization of styrene)

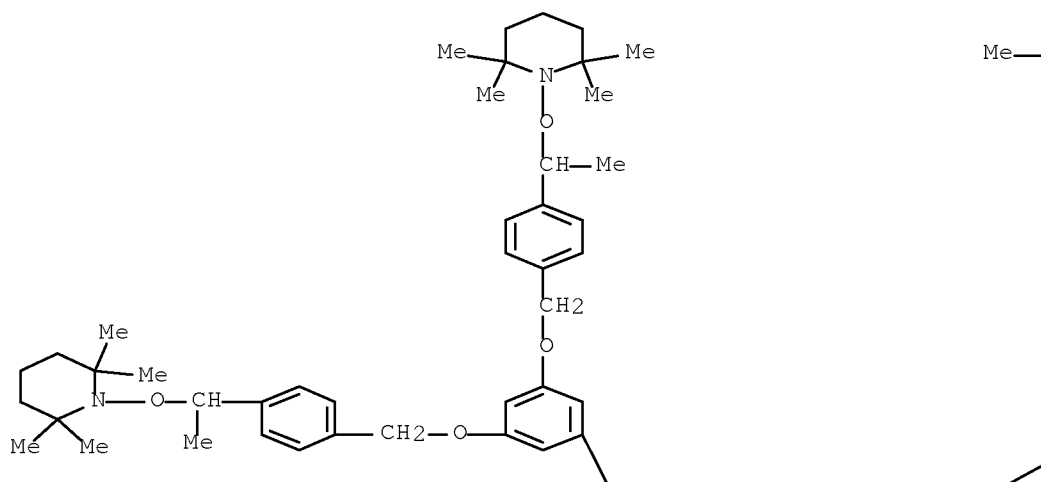
RN 878806-48-5 HCAPLUS

CN Phenol, 3,5-bis[[4-[1-[(2,2,6,6-tetramethyl-1-  
piperidinyl)oxy]ethyl]phenyl]methoxy]- (CA INDEX NAME)

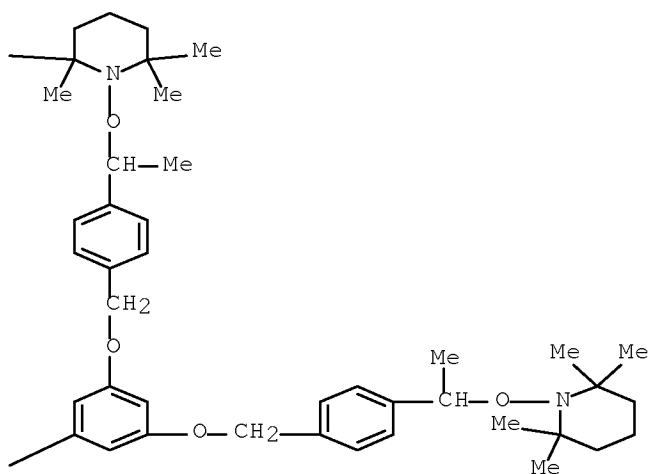


RN 878806-49-6 HCAPLUS

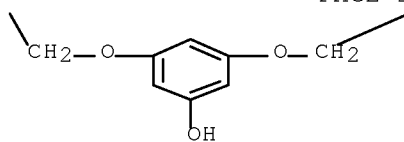
CN Phenol, 3,5-bis[[3,5-bis[[4-[1-[(2,2,6,6-tetramethyl-1-  
piperidinyl)oxy]ethyl]phenyl]methoxy]phenyl]methoxy]- (CA INDEX NAME)



PAGE 1-B



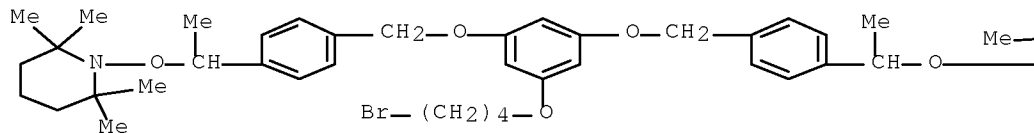
PAGE 2-A



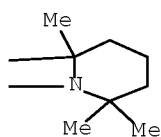
10/519,030

CN Piperidine, 1,1'-[[5-(4-bromobutoxy)-1,3-phenylene]bis(oxymethylene-4,1-phenyleneethylideneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

PAGE 1-A



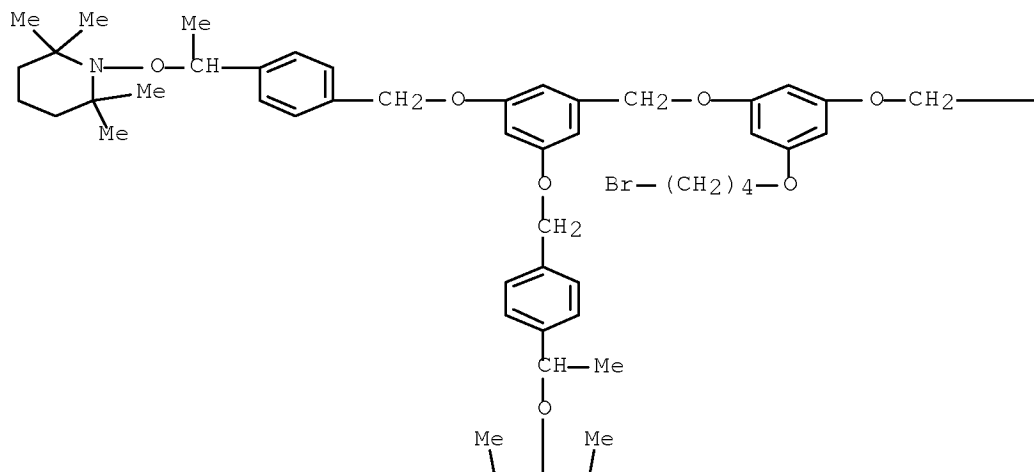
PAGE 1-B

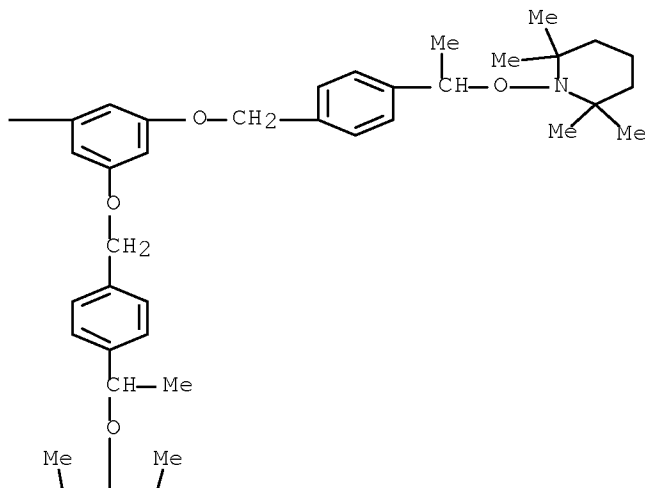


RN 878806-52-1 HCAPLUS

CN Piperidine, 1,1',1'',1'''-[[5-(4-bromobutoxy)-1,3-phenylene]bis[oxymethylene-5,1,3-benzenetriylbis(oxymethylene-4,1-phenyleneethylideneoxy)]]tetrakis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

PAGE 1-A

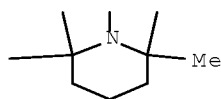




PAGE 2-A



PAGE 2-B

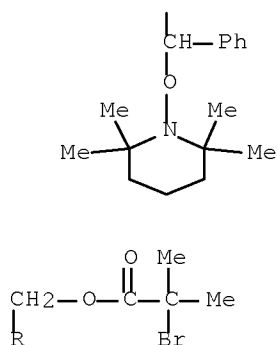
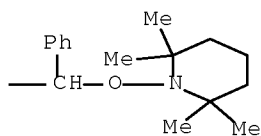
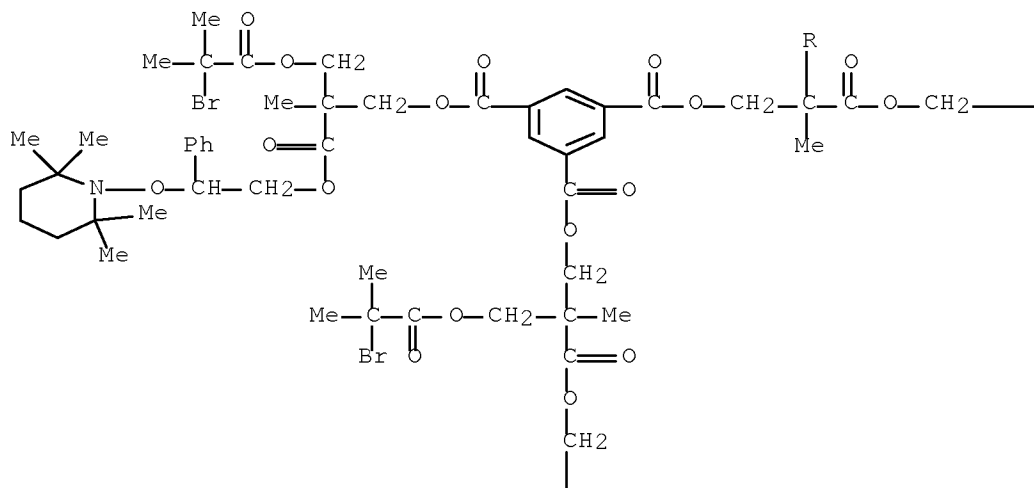


- 132

10/519,030

nitroxide-mediated radical polymerization of styrene)  
IT 878806-48-5P 878806-49-6P 878806-50-9P  
878806-52-1P  
(syntheses of star copolymers by combination of anionic  
ring-opening polymerization of hexamethylcyclotrisiloxane and  
nitroxide-mediated radical polymerization of styrene)  
REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L69 ANSWER 5 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2005:574020 HCAPLUS Full-text  
DOCUMENT NUMBER: 144:254458  
TITLE: Synthesis of A3B3-type polystyrene-poly(methyl  
methacrylate) miktoarm star polymers via  
combination of stable free radical and atom  
transfer radical polymerization routes  
AUTHOR(S): Durmaz, Hakan; Aras, Sermin; Hizal, Gurkan; Tunca,  
Umit  
CORPORATE SOURCE: Department of Chemistry, Istanbul Technical  
University, Istanbul, 34469, Turk.  
SOURCE: Designed Monomers and Polymers (2005), 8(3),  
203-210  
CODEN: DMPOF3; ISSN: 1385-772X  
PUBLISHER: VSP  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
ED Entered STN: 04 Jul 2005  
AB An A3B3-type miktoarm star polymer was prepared utilizing a "core-out" method  
via combination of stable free radical polymerization (SFRP) and atom transfer  
radical polymerization (ATRP). First, SFRP of styrene was carried out by  
using a miktofunctional initiator, benzene-1,3,5-tricarboxylic acid tris{3-(2-  
bromo-2-methyl- propionyloxy)-2-methyl-2-[2-phenyl-2-(2,2,6,6-  
tetramethylpiperidin-1- yloxy)ethoxy-carbonyl]propyl} ester, at 125°C.  
Second, previously obtained polystyrene (A3-type PSt) precursor with three  
bromine functionalities in the core was used as a macroinitiator for ATRP of  
Me methacrylate (MMA) in the presence of Cu(I)Cl and  
pentamethyldiethylenetriamine at 90°C in order to give an A3B3-type miktoarm  
star polymer, (PSt)3(-PMMA)3, with controlled mol. weight and moderate  
polydispersity (Mw/Mn < 1.41).  
IT 876931-41-8P  
(core and multifunctional initiator; synthesis of  
A3B3-type polystyrene-poly(Me methacrylate) miktoarm star polymers  
via combination of stable free radical and atom transfer radical  
polymerization routes)  
RN 876931-41-8 HCAPLUS  
CN 1,3,5-Benzenetricarboxylic acid, tris[2-[(2-bromo-2-methyl-1-  
oxopropoxy)methyl]-2-methyl-3-oxo-3-[2-phenyl-2-[(2,2,6,6-tetramethyl-  
1-piperidinyl)oxy]ethoxy]propyl] ester (9CI) (CA INDEX NAME)



- CC 35-4 (Chemistry of Synthetic High Polymers)  
 IT Polymerization catalysts  
 (radical; synthesis of A3B3-type polystyrene-poly(Me methacrylate)  
 miktoarm star polymers via combination of stable free radical and  
 atom transfer radical polymerization routes)  
 IT 876931-41-8P  
 (core and multifunctional initiator; synthesis of

10/519,030

A3B3-type polystyrene-poly(Me methacrylate) miktoarm star polymers via combination of stable free radical and atom transfer radical polymerization routes)

IT 9003-53-6P, Polystyrene

(three-arms star, multifunctional initiator; synthesis of A3B3-type polystyrene-poly(Me methacrylate) miktoarm star polymers via combination of stable free radical and atom transfer radical polymerization routes)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 6 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:217463 HCAPLUS Full-text

DOCUMENT NUMBER: 142:411785

TITLE: Synthesis of AB2 3- and AB4 5-miktoarm star copolymers initiated from dendritic tri- and penta-functional initiators by combination of ring-opening polymerization of  $\epsilon$ -caprolactone and nitroxide-mediated radical polymerization of styrene

AUTHOR(S): Miura, Yozo; Sakai, Yumi; Yamaoka, Keisuke  
CORPORATE SOURCE: Department of Applied Chemistry, Graduate School of Engineering, Osaka City University, Osaka, 558-8585, Japan

SOURCE: Macromolecular Chemistry and Physics (2005), 206(4), 504-512

CODEN: MCHPES; ISSN: 1022-1352

PUBLISHER: Wiley-VCH Verlag GmbH & Co. KGaA

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 11 Mar 2005

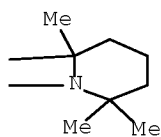
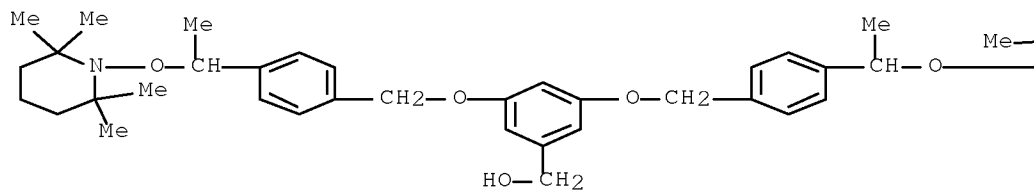
AB Well-defined AB2 3- and AB4 5-miktoarm star copolymers were prepared by combination of ring-opening polymerization (ROP) and nitroxide-mediated radical polymerization (NMRP) using dendritic tri- and penta-functional initiators. Initially, two kinds of dendritic initiators having one benzylic OH and two or four TEMPO-based alkoxyamine moieties were prepared. Using them, ROP of  $\epsilon$ -caprolactone was carried out at room temperature to give poly( $\epsilon$ -caprolactone)s carrying two or four alkoxyamine moieties. NMRP of styrene from the poly( $\epsilon$ -caprolactone)s was carried out at 120°C to give AB2 3- and AB4 5-miktoarm star copolymers, which were analyzed by <sup>1</sup>H NMR and SEC. The  $M_n$ s increased linearly with conversion and the  $M_w/M_n$  were in the range 1.10-1.37, showing that well-defined AB2 3- and AB4 5-miktoarm star copolymers were formed.

IT 492446-77-2

(preparation of dendritic penta-functional initiators for synthesis of AB4 5-miktoarm star copolymers)

RN 492446-77-2 HCAPLUS

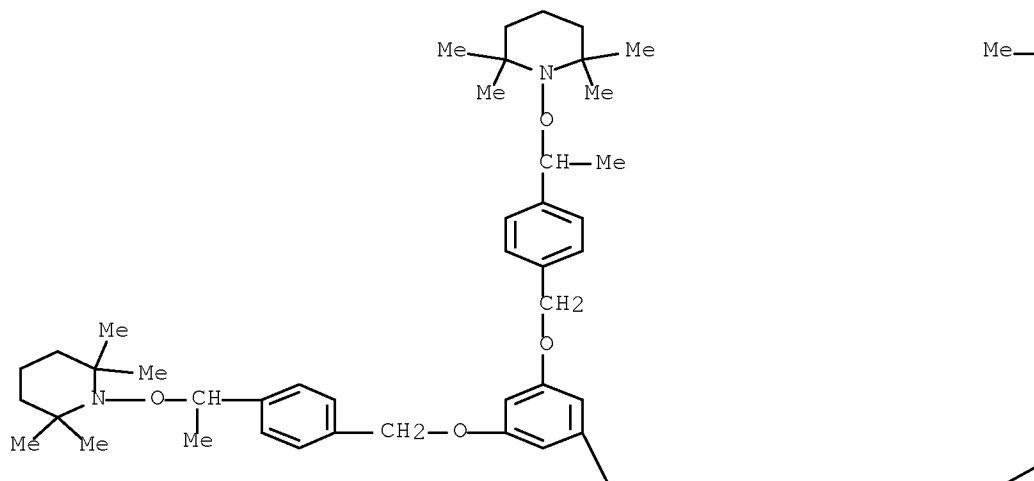
CN Benzenemethanol, 3,5-bis[[4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]phenyl]methoxy]- (CA INDEX NAME)



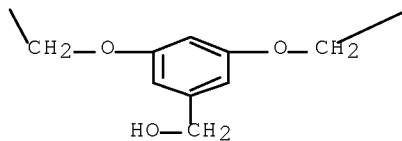
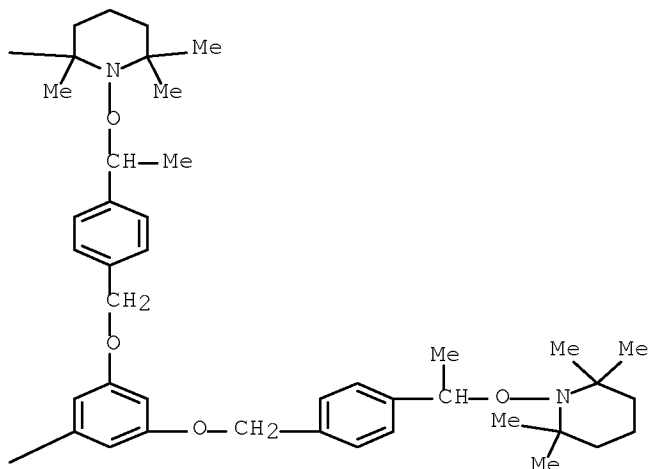
IT 850538-80-6P

(preparation of dendritic penta-functional initiators for  
synthesis of AB4 5-miktoarm star copolymers)

RN 850538-80-6 HCAPLUS

CN Benzenemethanol, 3,5-bis[[3,5-bis[[4-[1-[(2,2,6,6-tetramethyl-1-  
piperidinyl)oxy]ethyl]phenyl]methoxy]phenyl]methoxy]- (CA INDEX NAME)

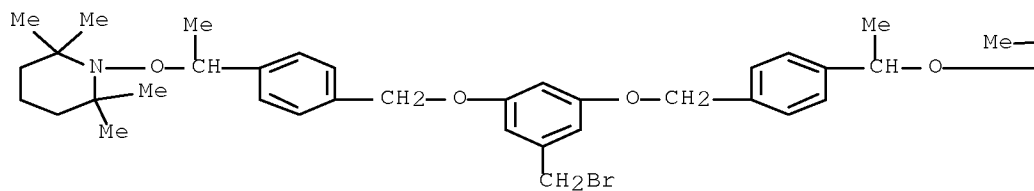


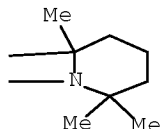


IT 492446-78-3

(preparation of dendritic penta-functional initiators for  
synthesis of AB4 5-miktoarm star copolymers)

RN 492446-78-3 HCAPLUS

CN Piperidine, 1,1'-[[5-(bromomethyl)-1,3-phenylene]bis(oxymethylene-4,1-  
phenyleneethylideneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX  
NAME)



CC 35-7 (Chemistry of Synthetic High Polymers)

IT Polyesters, preparation  
(lactone-based; synthesis of AB2 3- and AB4 5-miktoarm star copolymers initiated from dendritic tri- and penta-functional initiators)

IT Polymerization catalysts  
(radical; synthesis of AB2 3- and AB4 5-miktoarm star copolymers initiated from dendritic tri- and penta-functional initiators)

IT Polymers, preparation  
(star-branched; synthesis of AB2 3- and AB4 5-miktoarm star copolymers initiated from dendritic tri- and penta-functional initiators)

IT 209550-24-3 492446-77-2  
(preparation of dendritic penta-functional initiators for synthesis of AB4 5-miktoarm star copolymers)

IT 850538-80-6P  
(preparation of dendritic penta-functional initiators for synthesis of AB4 5-miktoarm star copolymers)

IT 29654-55-5, 3,5-Dihydroxybenzyl alcohol 492446-78-3  
(preparation of dendritic penta-functional initiators for synthesis of AB4 5-miktoarm star copolymers)

IT 24980-41-4P,  $\epsilon$ -Caprolactone homopolymer 25248-42-4P,  
 $\epsilon$ -Caprolactone homopolymer, sru 29010-44-4P,  
 $\epsilon$ -Caprolactone-styrene copolymer  
(synthesis of AB2 3- and AB4 5-miktoarm star copolymers initiated from dendritic tri- and penta-functional initiators)

REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 7 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:15040 HCAPLUS Full-text

DOCUMENT NUMBER: 142:261830

TITLE: Multi-armed, TEMPO-functionalized unimolecular initiators for starburst dendrimer synthesis via stable free radical polymerization. 2. Tris (1,3,5)benzyloxy unimers

AUTHOR(S): Ghani, Mohmad Asri Abd; Abdallah, Dalia; Kazmaier, Peter M.; Keoshkerian, Barkev; Buncel, Erwin

CORPORATE SOURCE: Department of Chemistry, Queen's University, Kingston, ON, K7L 3N6, Can.

SOURCE: Canadian Journal of Chemistry (2004), 82(9), 1403-1412  
CODEN: CJCHAG; ISSN: 0008-4042

PUBLISHER: National Research Council of Canada

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 142:261830

ED Entered STN: 07 Jan 2005

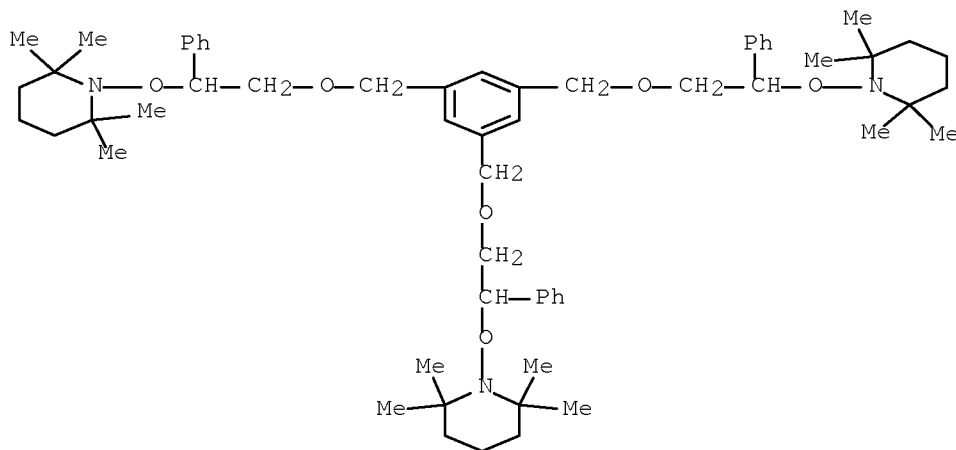
AB The synthesis of the trifunctionalized TEMPO-modified unimol. initiators, unimers I, II, and III is described. Unimer I was prepared via an SN2 type Williamson ether coupling of 1,3,5-tris(iodomethyl)benzene with a TEMPO-containing ethylbenzene hydroxy derivative. The synthesis of unimer II, however, was accomplished through SN1 reaction of 1,3,5-tris(bromomethyl)benzene with the hydroxy-ethylbenzene TEMPO derivative in the presence of silver triflate. Synthesis of unimer III started from phloroglucinol and an SNAr reaction with 1-fluoro-4-nitrobenzene, followed by reduction to the amino compound and Schiff base formation with the TEMPO-derivatized aromatic aldehyde. Stable free radical polymerization (SFRP) of styrene and acetoxystyrene with unimer I are also described with mol. wts. and polydispersities reported. It is concluded that the SFRP of styrene with a triradical initiator meets the requirements of a living system.

IT 372522-45-7P 845745-22-4P 845745-23-5P

(preparation of multi-armed, TEMPO-functionalized trisbenzyloxyunimol. initiators for radical polymerization of styrene and acetoxystyrene)

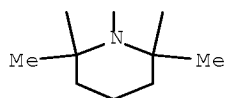
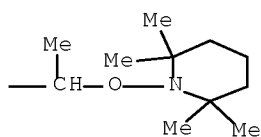
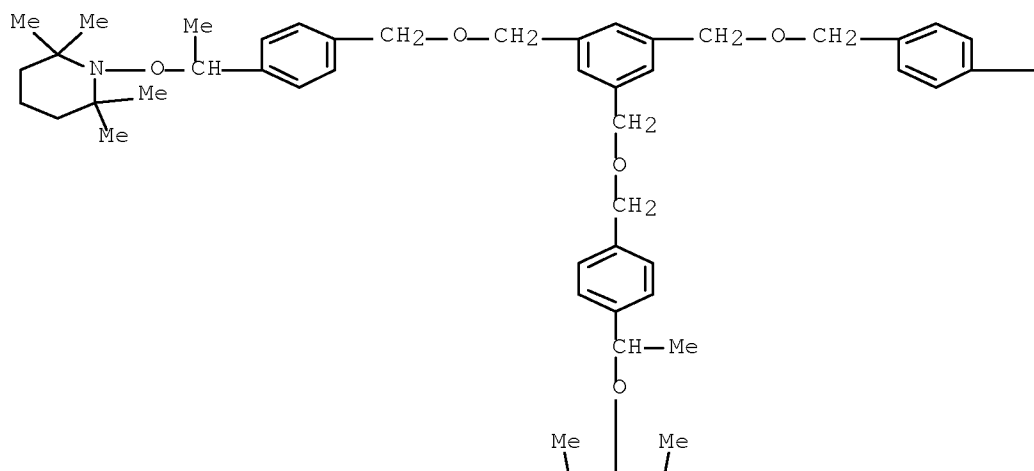
RN 372522-45-7 HCAPLUS

CN Piperidine, 1,1',1''-[1,3,5-benzenetriyltris[methyleneoxy(1-phenyl-2,1-ethanediyl)oxy]]tris[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

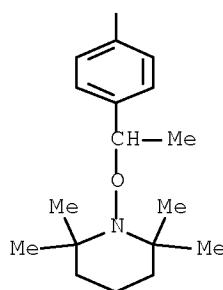
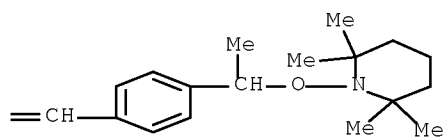
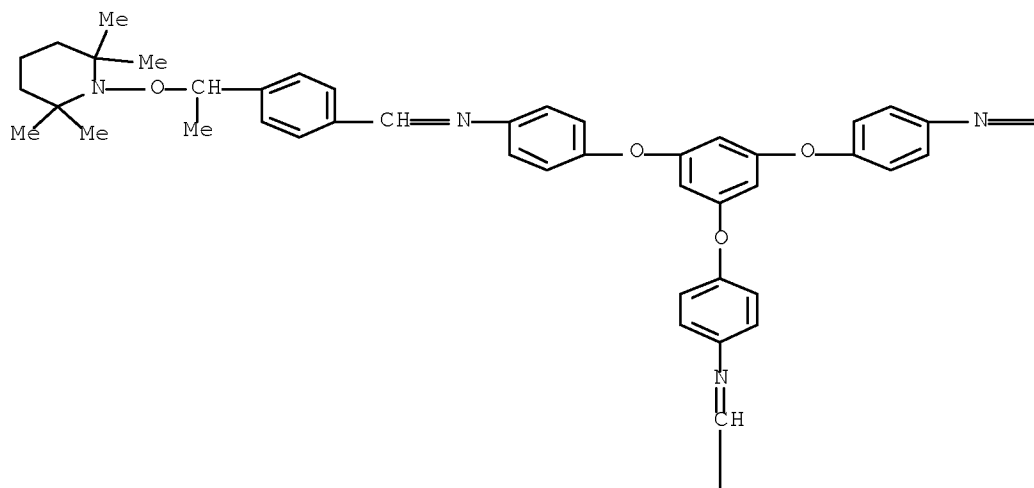


RN 845745-22-4 HCAPLUS

CN Piperidine, 1,1',1''-[1,3,5-benzenetriyltris(methyleneoxymethylene-4,1-phenyleneethylideneoxy)]tris[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



RN 845745-23-5 HCAPLUS  
 CN Benzenamine, 4,4',4''-[1,3,5-benzenetriyltris(oxy)]tris[N-[[4-[1-  
 [(2,2,6,6-tetramethyl-1-piperidinyloxy)ethyl]phenyl]methylene]- (9CI)  
 (CA INDEX NAME)



- CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST styrene acetoxystyrene radical polymn catalyst multiarmed  
 TEMPO functionalized trisbenzyloxyunimol  
 IT Molecular weight  
 Molecular weight distribution  
 (preparation of multi-armed, TEMPO-functionalized trisbenzyloxyunimol.  
 initiators for radical polymerization of styrene and  
 acetoxystyrene)  
 IT Polymerization catalysts

(radical; preparation of multi-armed, TEMPO-functionalized trisbenzyloxyunimol. initiators for radical polymerization of styrene and acetoxystyrene)

- IT Polymers, preparation  
(star-branched; preparation of multi-armed, TEMPO-functionalized trisbenzyloxyunimol. initiators for radical polymerization of styrene and acetoxystyrene)
- IT 9003-53-6P, Polystyrene 24979-78-0DP, Poly(p-acetoxystyrene), hydrolyzed 24979-78-0P, Poly(p-acetoxystyrene) 188203-34-1P, p-Acetoxystyrene-styrene block copolymer  
(3-armed; preparation of multi-armed, TEMPO-functionalized trisbenzyloxyunimol. initiators for radical polymerization of styrene and acetoxystyrene)
- IT 209550-24-3P 372522-45-7P 845745-22-4P 845745-23-5P  
(preparation of multi-armed, TEMPO-functionalized trisbenzyloxyunimol. initiators for radical polymerization of styrene and acetoxystyrene)
- IT 94-36-0, BPO, reactions 100-41-4, Ethylbenzene, reactions 100-42-5, Styrene, reactions 108-73-6, 1,3,5-Trihydroxybenzene 350-46-9, 4-Fluoro-nitrobenzene 1074-61-9, 4-Vinylbenzyl alcohol 1876-22-8, Di-tert-butylperoxyoxalate 2564-83-2, TEMPO 18226-42-1, 1,3,5-Tris(bromomethyl)benzene 90678-60-7, 1,3,5-Tris(iodomethyl)benzene 102852-91-5 209550-23-2  
(preparation of multi-armed, TEMPO-functionalized trisbenzyloxyunimol. initiators for radical polymerization of styrene and acetoxystyrene)
- IT 81913-53-3P 102852-92-6P 154554-67-3P 161776-41-6P  
(preparation of multi-armed, TEMPO-functionalized trisbenzyloxyunimol. initiators for radical polymerization of styrene and acetoxystyrene)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 8 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:15039 HCAPLUS Full-text

DOCUMENT NUMBER: 142:261829

TITLE: Multi-armed, TEMPO-functionalized unimolecular initiators for starburst dendrimer synthesis via stable free radical polymerization.

1. Tri azofunctionalized unimer  
AUTHOR(S): Abdallah, Dalia; Ghani, Mohmad Asri Abd; Cunningham, Michael F.; Kazmaier, Peter M.; Keoshkerian, Barkev; Buncel, Erwin

CORPORATE SOURCE: Department of Chemistry, Queen's University, Kingston, ON, K7L 3N6, Can.

SOURCE: Canadian Journal of Chemistry (2004), 82(9), 1393-1402

CODEN: CJCHAG; ISSN: 0008-4042

PUBLISHER: National Research Council of Canada

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 142:261829

ED Entered STN: 07 Jan 2005

AB The synthesis of azobenzene-functionalized multi-armed unimol. initiators or "unimers" that can be polymerized using styrene or styrenic derivs. via TEMPO (2,2,6,6-tetramethylpiperidenyl-1-oxyl) mediated stable free radical polymerization (SFRP) is described. The unimers are composed of an azobenzene-functionalized core and a TEMPO-modified unit. Homopolymers and

copolymers of styrene and acetoxystyrene were synthesized using the mono- and trifunctionalized unimers as initiators under bulk conditions with average mol. wts. and polydispersities reported. The studies lay the groundwork for further investigations involving SFRP towards building a light harvesting system by introducing chromophores onto the polymer chains for capturing light and thence transferring it to the azobenzene core.

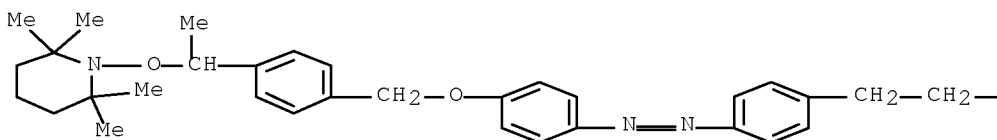
IT 845728-32-7P 845728-34-9P

(multi-armed, TEMPO-functionalized unimol. initiators for starburst dendrimer synthesis via stable radical polymerization)

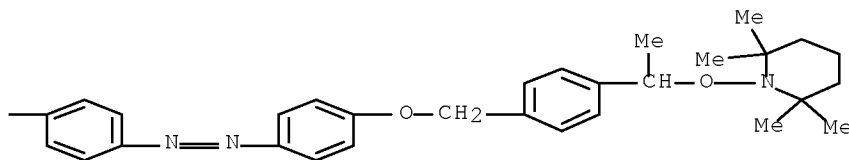
RN 845728-32-7 HCAPLUS

CN Piperidine, 1,1'-[1,2-ethanediylbis(4,1-phenyleneazo-4,1-phenyleneoxymethylene-4,1-phenyleneethylideneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

PAGE 1-A

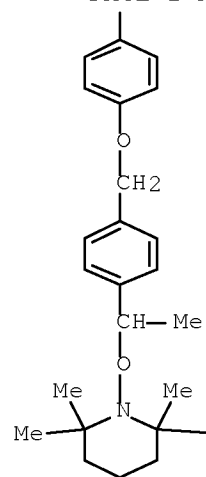
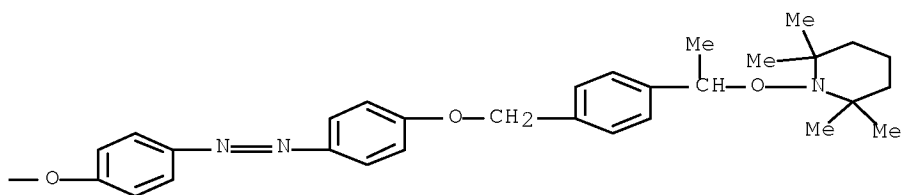
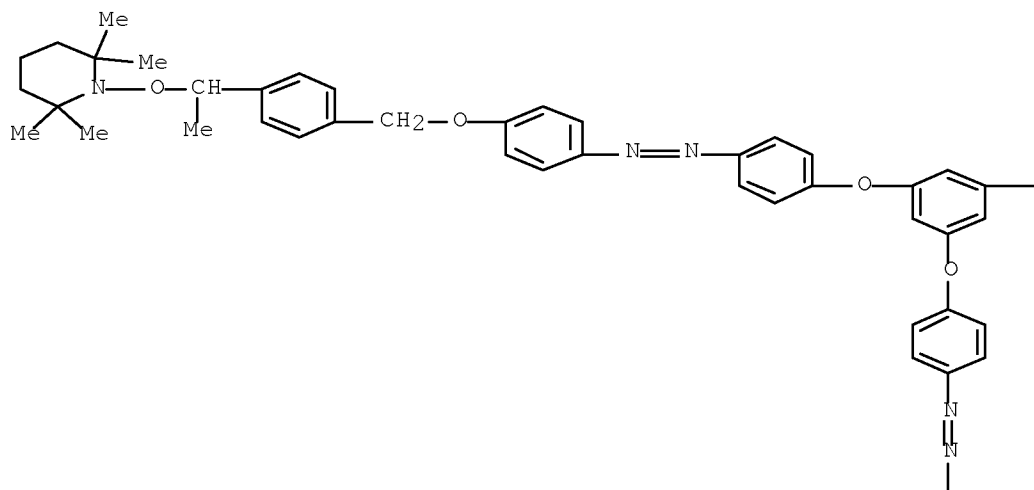


PAGE 1-B



RN 845728-34-9 HCAPLUS

CN Piperidine, 1,1',1''-[1,3,5-benzenetriyltris(oxy-4,1-phenyleneazo-4,1-phenyleneoxymethylene-4,1-phenyleneethylideneoxy)]tris[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)





—Me

- CC 35-3 (Chemistry of Synthetic High Polymers)
- ST triazofunctionalized unimer initiator radical polymn styrene  
acetoxystyrene dendrimer synthesis; TEMPO modified styrene  
acetoxystyrene copolymer polystyrene polyacetoxystyrene dendrimer  
synthesis
- IT Molecular weight  
Molecular weight distribution  
(multi-armed, TEMPO-functionalized unimol. initiators for  
starburst dendrimer synthesis via stable radical polymerization)
- IT Polymerization catalysts  
(radical; multi-armed, TEMPO-functionalized unimol.  
initiators for starburst dendrimer synthesis via stable  
radical polymerization)
- IT Polymers, preparation  
(star-branched; multi-armed, TEMPO-functionalized unimol.  
initiators for starburst dendrimer synthesis via stable  
radical polymerization)
- IT 24979-78-0P, Poly(p-acetoxystyrene) 188203-34-1P,  
p-Acetoxystyrene-styrene block copolymer  
(linear or 3-armed; multi-armed, TEMPO-functionalized unimol.  
initiators for starburst dendrimer synthesis via stable  
radical polymerization)
- IT 1876-22-8P, Di-tert-Butyl peroxyoxalate 845728-31-6P  
845728-32-7P 845728-34-9P  
(multi-armed, TEMPO-functionalized unimol. initiators for  
starburst dendrimer synthesis via stable radical polymerization)
- IT 9003-53-6P, Polystyrene 24979-78-0DP, Poly(p-acetoxystyrene),  
hydrolyzed 53746-03-5P, p-Acetoxystyrene-styrene copolymer  
(multi-armed, TEMPO-functionalized unimol. initiators for  
starburst dendrimer synthesis via stable radical polymerization)
- IT 75-91-2, tert-Butylhydroperoxide 79-37-8, Oxalyl chloride  
108-73-6, 1,3,5-Benzenetriol 108-95-2, Phenol, reactions 350-46-9  
621-95-4 1689-82-3 2564-83-2, TEMPO 4748-78-1 7632-00-0,  
Sodium nitrite  
(multi-armed, TEMPO-functionalized unimol. initiators for  
starburst dendrimer synthesis via stable radical polymerization)
- IT 768-59-2P 57825-30-6P 90264-99-6P 102852-91-5P 102852-92-6P  
492446-76-1P 845728-30-5P 845728-33-8P  
(multi-armed, TEMPO-functionalized unimol. initiators for

starburst dendrimer synthesis via stable radical polymerization)  
 IT 558-13-4  
 (multi-armed, TEMPO-functionalized unimol. initiators for  
 starburst dendrimer synthesis via stable radical polymerization)  
 REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L69 ANSWER 9 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:76619 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:112181  
 TITLE: Manufacture of polymers having dissociative  
 electron attachment groups and scission of the  
 polymer main chains  
 INVENTOR(S): Ichikawa, Tsuneki; Koizumi, Hitoshi; Shimizu,  
 Akira  
 PATENT ASSIGNEE(S): Shin-Etsu Chemical Industry Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| -----                  | ---- | -----    | -----           | -----    |
| JP 2004026981          | A    | 20040129 | JP 2002-184301  | 20020625 |
| PRIORITY APPLN. INFO.: |      |          | JP 2002-184301  | 20020625 |

ED Entered STN: 30 Jan 2004

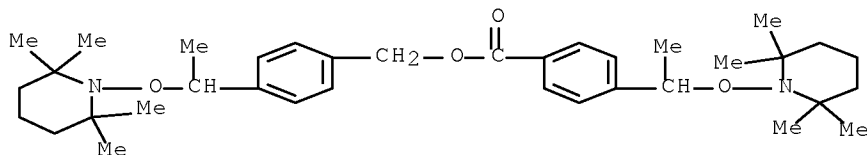
AB The polymers, useful for resists for radiation lithog., are manufactured by reaction of monomers capable of living polymerization with compds. having living polymerization initiating groups on both ends via dissociative electron attachment groups which cleave by attachment of dissociative electron. The polymer main chain is cut by irradiation of electromagnetic wave or particle beam having energy sufficient to ionize the mol. Thus, 4-[1-(2,2,6,6-tetramethylpiperidiny-1-oxy)ethyl]benzyl alc. was esterified with 4-[1-(2,2,6,6-tetramethylpiperidiny-1-oxy)ethyl]benzoic acid, then the resulting ester was added 2% to styrene and heated to 130°, when living radical polymerization reaction occurred. The polymer was cut in half by irradiation of  $\gamma$ -ray.

IT 647849-32-9P

(manufacture of living polymers having radiation-cleavable structure in main chain)

RN 647849-32-9 HCAPLUS

CN Benzoic acid, 4-[1-[(2,2,6,6-tetramethyl-1-piperidinyloxy)ethyl]-, [4-[1-[(2,2,6,6-tetramethyl-1-piperidinyloxy)ethyl]phenyl]methyl ester (CA INDEX NAME)



IC ICM C08F004-00  
 ICS C08F012-00; C08F020-00; C08J003-28; C08L101-00  
 CC 37-3 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 25, 27, 74  
 IT 647849-32-9P  
 (manufacture of living polymers having radiation-cleavable structure in main chain)

L69 ANSWER 10 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:54261 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:94477  
 TITLE: Initiators for nitroxide-mediated  
 polymerization based on azlactone or their  
 ring-opened derivatives  
 INVENTOR(S): Fansler, Duane D.; Lewandowski, Kevin M.;  
 Wendland, Michael S.; Gaddam, Babu N.  
 PATENT ASSIGNEE(S): 3M Innovative Properties Company, USA  
 SOURCE: U.S., 11 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.                                                                                                                                                                                                                                                        | KIND | DATE     | APPLICATION NO. | DATE        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-----------------|-------------|
| US 6680362                                                                                                                                                                                                                                                        | B1   | 20040120 | US 2003-358767  | 20030205    |
| US 2004152853                                                                                                                                                                                                                                                     | A1   | 20040805 | US 2003-726956  | 20031203    |
| US 6784265                                                                                                                                                                                                                                                        | B2   | 20040831 |                 |             |
| WO 2004072139                                                                                                                                                                                                                                                     | A1   | 20040826 | WO 2004-US1130  | 20040116    |
| WO 2004072139                                                                                                                                                                                                                                                     | A8   | 20050224 |                 |             |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI |      |          |                 |             |
| RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG                                |      |          |                 |             |
| EP 1590387                                                                                                                                                                                                                                                        | A1   | 20051102 | EP 2004-702949  | 20040116    |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK                                                                                                                                     |      |          |                 |             |
| JP 2006516669                                                                                                                                                                                                                                                     | T    | 20060706 | JP 2006-502858  | 20040116    |
| PRIORITY APPLN. INFO.:                                                                                                                                                                                                                                            |      |          | US 2003-358767  | A3 20030205 |
|                                                                                                                                                                                                                                                                   |      |          | WO 2004-US1130  | W 20040116  |

OTHER SOURCE(S): MARPAT 140:94477

ED Entered STN: 22 Jan 2004

AB A controlled radical polymerization initiator comprises R5ZCO(CH2)nCR3R4NHCOQCRI[(CH2)qX][CH2CRI[QCONHCR3R4(CH2)nCOZR5]]mONR22, wherein X is an H, an alkyl group, a cycloalkyl group, a heterocyclic group, an arenyl group, an aryl group, a nitrile, an acyl group or the residue of a free-radical initiator; R1 is H, an alkyl group, a cycloalkyl group, a heterocyclic group, an arenyl group or an aryl group; ON(R2)2 is the residue of an organonitroxide; R3 and R4 are each independently selected from an alkyl, a cycloalkyl group, an aryl group, an arenyl group, or R3 and R4 taken together with the carbon to which they are attached form a carbocyclic ring; Q is a linking group selected from a covalent bond, (CH2)o, CO2(CH2)o,

$\text{CO}_2(\text{CH}_2\text{CH}_2\text{O})_o$ ,  $\text{CONR}_6(\text{CH}_2)_o$ ,  $\text{COS}(\text{CH}_2)_o$ , where  $o$  is 1 to 12, and  $\text{R}_6$  is H, an alkyl group, a cycloalkyl group, an arenyl group, a heterocyclic group or an aryl group; each  $n$  is 0 or 1;  $m$  is 0 to 20;  $q$  is 0 or 1;  $Z$  is O, S or  $\text{NR}_6$ , wherein  $\text{R}_6$  is H, an alkyl group, a cycloalkyl group, an arenyl group, a heterocyclic group or an aryl group;  $\text{R}_5$  is an organic or inorg. moiety and has a valency of  $p$ . The initiators have an azlactone or ring-opened azlactone moiety to provide telechelic (co)polymers. 4,4-Dimethyl-2-[1-(2,2,6,6-tetramethylpiperidin-1-yloxy)-ethyl]-4H-oxazol-5-one was prepared and used in polymerization of styrene.

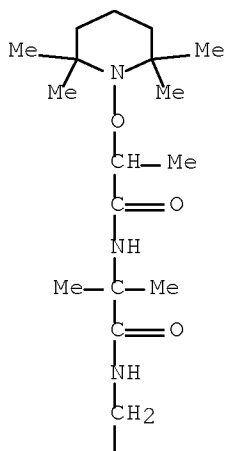
IT 642479-67-2P

(initiators for nitroxide-mediated polymerization based on azlactone or their ring-opened derivs.)

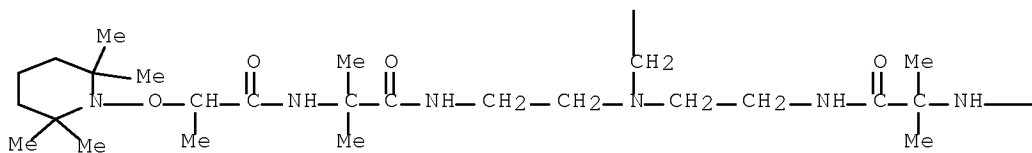
RN 642479-67-2 HCAPLUS

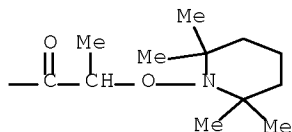
CN Propanamide, N,N',N''-(nitrilotri-2,1-ethanediyl)tris[2-methyl-2-[[1-oxo-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]propyl]amino]- (9CI)  
(CA INDEX NAME)

PAGE 1-A



PAGE 2-A





IC ICM C08F002-00  
 INCL 526217000; 526222000; 526224000; 526265000; 526271000; 526287000;  
 526291000; 526303100; 526304000; 526306000  
 CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST azlactone initiator nitroxide mediated radical polymn  
 IT Polymerization catalysts  
 (controlled radical; initiators for nitroxide-mediated  
 polymerization based on azlactone or their ring-opened derivs.)  
 IT 642479-67-2P  
 (initiators for nitroxide-mediated polymerization based on  
 azlactone or their ring-opened derivs.)  
 IT 642479-65-0P  
 (initiators for nitroxide-mediated polymerization based on  
 azlactone or their ring-opened derivs.)  
 IT 9003-53-6P, Styrene homopolymer  
 (initiators for nitroxide-mediated polymerization based on  
 azlactone or their ring-opened derivs.)  
 IT 642479-59-2P 642479-61-6P 642479-63-8P  
 (initiators for nitroxide-mediated polymerization based on  
 azlactone or their ring-opened derivs.)  
 IT 62-57-7, 2-Aminoisobutyric acid 563-76-8, 2-Bromopropionyl bromide  
 2564-83-2, TEMPO 4097-89-6, Tris(2-aminoethyl)amine 21055-93-6,  
 Sodium diethylthiocarbamate  
 (initiators for nitroxide-mediated polymerization based on  
 azlactone or their ring-opened derivs.)  
 REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L69 ANSWER 11 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:42401 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:236159  
 TITLE: Synthesis of Nanosized "Cored" Star Polymers  
 AUTHOR(S): Beil, James B.; Zimmerman, Steven C.  
 CORPORATE SOURCE: Department of Organic Chemistry, University of  
 Illinois at Urbana Champaign, Urbana, IL, 61801,  
 USA  
 SOURCE: Macromolecules (2004), 37(3), 778-787  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 19 Jan 2004  
 AB A synthetic approach to nanosized "cored" star polymers is reported. A  
 5,10,15,20-tetrakis(4-carboxyphenyl)porphyrin core was functionalized with  
 four 2,2,6,6-tetramethylpiperidinyl-1-oxy (TEMPO) initiating groups. Four-  
 armed star copolymers of styrene and 4-hydroxystyrene were synthesized and  
 functionalized with 3,5-di(3-buten-1-oxy) benzyl bromide groups but exhibited  
 poor solubility As an alternative, 5,10,15,20-tetrakis(3',5'-

dihydroxyphenyl)porphyrin was functionalized with 2-bromo-2-methyl-propionyl groups capable of initiating atom transfer radical polymerization (ATRP). Copolymn. of the core initiator with 1-but-3-enyl-4-vinylbenzene and styrene at low conversion produced soluble eight-armed star block copolymers. Through the ring-closing metathesis (RCM) reaction, the alkene groups of the polymer were intramolecularly cross-linked. The ester groups linking the cross-linked polymer arms to the porphyrin core were hydrolyzed, producing a "cored" star polymer with a mol. weight of approx. 20 kDa and a polydispersity index (PDI) of 1.5.

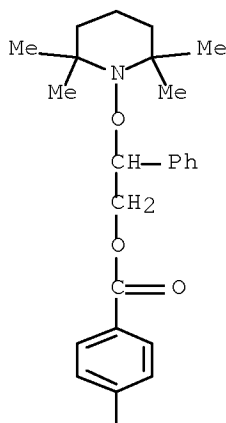
IT 668420-45-9P

(polymerization catalyst; in preparation of nanosized "Cored" star polymers)

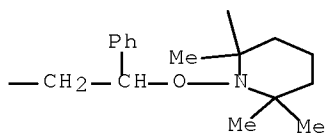
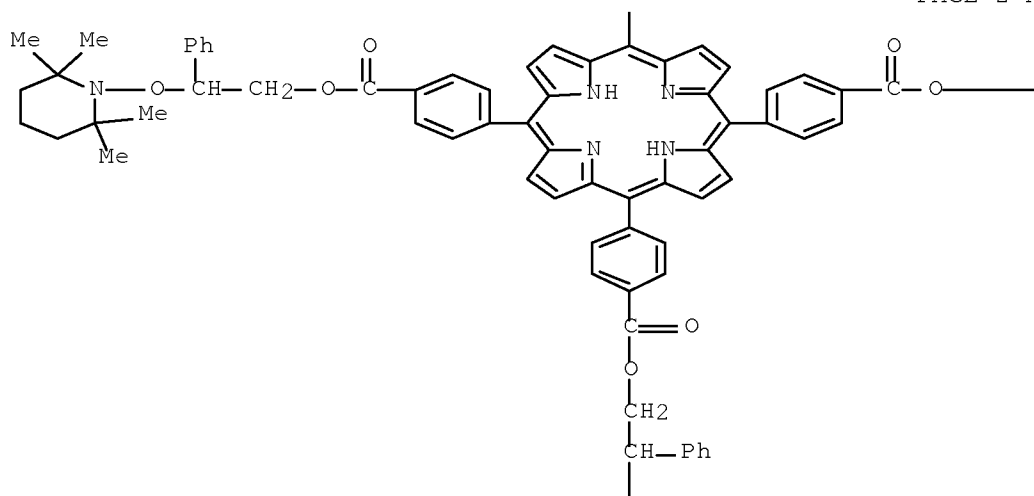
RN 668420-45-9 HCAPLUS

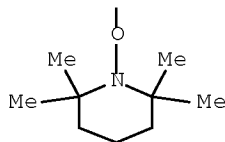
CN Benzoic acid, 4,4',4'',4'''-(21H,23H-porphine-5,10,15,20-tetrayl)tetrakis-, tetrakis[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



Me  
|





CC 35-4 (Chemistry of Synthetic High Polymers)  
 ST Star block copolymer TEMPO contg core initiator ATRP  
 IT 668420-45-9P 668420-51-7P  
 (polymerization catalyst; in preparation of nanosized "Cored" star polymers)  
 IT 245107-65-7DP, crosslinked derivative by metathesis catalyst, and hydrolyzed  
 (preparation of nanosized "Cored" star polymers)  
 IT 245107-65-7P 668420-49-3DP, derivative with a core initiator, hydrolyzed, reaction product with di-substituted benzyl bromide 668420-50-6DP, derivative with styrene-hydroxy styrene copolymer (star polymer; preparation of nanosized "Cored" star polymers)  
 REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 12 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:33987 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:94467  
 TITLE: Azlactone initiators for nitroxide-mediated polymerization  
 INVENTOR(S): Lewandowski, Kevin M.; Fansler, Duane D.; Wendland, Michael S.; Gaddam, Babu N.  
 PATENT ASSIGNEE(S): 3M Innovative Properties Company, USA  
 SOURCE: U.S., 11 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.    | KIND | DATE     | APPLICATION NO. | DATE     |
|---------------|------|----------|-----------------|----------|
| US 6677413    | B1   | 20040113 | US 2003-358724  | 20030205 |
| US 2004152852 | A1   | 20040805 | US 2003-726405  | 20031203 |
| US 6784264    | B2   | 20040831 |                 |          |
| WO 2004072127 | A1   | 20040826 | WO 2003-US41366 | 20031223 |

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG



10/519,030

|                                                                |    |          |                 |             |
|----------------------------------------------------------------|----|----------|-----------------|-------------|
| AU 2003297540                                                  | A1 | 20040906 | AU 2003-297540  | 20031223    |
| EP 1590374                                                     | A1 | 20051102 | EP 2003-815923  | 20031223    |
| EP 1590374                                                     | B1 | 20060614 |                 |             |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, |    |          |                 |             |
| PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK |    |          |                 |             |
| JP 2006514133                                                  | T  | 20060427 | JP 2004-568343  | 20031223    |
| AT 329933                                                      | T  | 20060715 | AT 2003-815923  | 20031223    |
| PRIORITY APPLN. INFO.:                                         |    |          | US 2003-358724  | A3 20030205 |
|                                                                |    |          | WO 2003-US41366 | W 20031223  |

OTHER SOURCE(S): MARPAT 140:94467

ED Entered STN: 15 Jan 2004

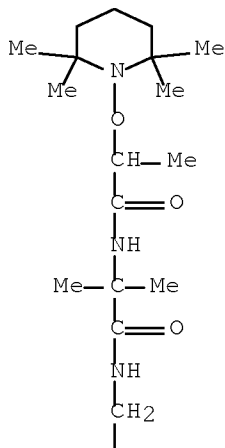
AB The initiators have an azlactone or ring-opened azlactone moiety to provide telechelic (co)polymers. AzTEMPO (0.00066 mol) and styrene (0.132 mol) were mixed in toluene, the solution was deoxygenated by bubbling N (g) through it for 30 min and heated to 130°, after 16 h the product had Mn 20,611 g/mol, then a 1% solution of tris(2-aminoethyl)amine (0.000226 mol) in toluene was added in two portions to give a three-arm polystyrene of Mn 50,061 g/mol.

IT 642479-67-2P  
(azlactone initiators for nitroxide-mediated polymerization of styrene)

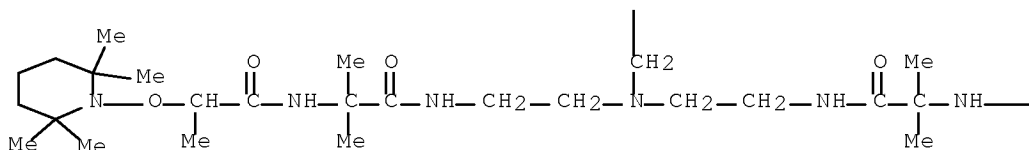
RN 642479-67-2 HCAPLUS

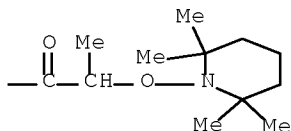
CN Propanamide, N,N',N''-(nitrilotri-2,1-ethanediyl)tris[2-methyl-2-[[1-oxo-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]propyl]amino]- (9CI)  
(CA INDEX NAME)

PAGE 1-A



PAGE 2-A





- IC ICM C08F002-00
- INCL 526204000; 526217000; 526222000; 526224000; 526265000; 526271000;  
526287000; 526291000; 526303100; 526304000
- CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 67
- IT Polymerization catalysts  
(radical; azlactone initiators for nitroxide-mediated  
polymerization of styrene)
- IT 642479-67-2P  
(azlactone initiators for nitroxide-mediated polymerization of  
styrene)
- IT 9003-53-6DP, Polystyrene, azlactone-terminated  
(azlactone initiators for nitroxide-mediated polymerization of  
styrene)
- IT 2564-83-2, TEMPO 29513-26-6, 2-Vinyl-4,4-dimethyl azlactone  
(azlactone initiators for nitroxide-mediated polymerization of  
styrene)
- IT 4097-89-6, Tris(2-aminoethyl)amine  
(coupling agent; azlactone initiators for  
nitroxide-mediated polymerization of styrene)
- IT 642479-65-0P  
(initiator; azlactone initiators for  
nitroxide-mediated polymerization of styrene)
- IT 642479-59-2P  
(intermediate; azlactone initiators for  
nitroxide-mediated polymerization of styrene)
- IT 642479-61-6P  
(reaction with TEMPO; azlactone initiators for  
nitroxide-mediated polymerization of styrene)
- IT 563-76-8, 2-Bromopropionyl bromide  
(reaction with aminoisobutyric acid; azlactone initiators  
for nitroxide-mediated polymerization of styrene)
- IT 62-57-7, 2-Aminoisobutyric acid  
(reaction with bromopropionyl bromide; azlactone initiators  
for nitroxide-mediated polymerization of styrene)
- IT 21055-93-6, Sodium diethylthiocarbamate  
(reaction with bromopropionylamino methylpropionic acid; azlactone  
initiators for nitroxide-mediated polymerization of styrene)
- IT 642479-63-8P  
(ring closure reaction; azlactone initiators for  
nitroxide-mediated polymerization of styrene)
- IT 9003-53-6P, Polystyrene  
(star, 3-arm; azlactone initiators for nitroxide-mediated  
polymerization of styrene)

10/519,030

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L69 ANSWER 13 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:42249 HCAPLUS Full-text

DOCUMENT NUMBER: 138:107153

TITLE: Multifunctional alkoxyamines based on  
polyalkylpiperidines, polyalkylpiperazinones and  
polyalkylmorpholinones and their use as  
polymerization regulators/initiators

INVENTOR(S): Kramer, Andreas; Muehlebach, Andreas; Nesvadba,  
Peter; Zink, Marie-Odile; Hintermann, Tobias

PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.

SOURCE: PCT Int. Appl., 48 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND                                                                                                                                                                                                                                                                                                                                                               | DATE     | APPLICATION NO. | DATE       |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|------------|
| WO 2003004471          | A1                                                                                                                                                                                                                                                                                                                                                                 | 20030116 | WO 2002-EP7131  | 20020627   |
| W:                     | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW |          |                 |            |
| RW:                    | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG                                                                                                                                                                     |          |                 |            |
| CA 2450232             | A1                                                                                                                                                                                                                                                                                                                                                                 | 20030116 | CA 2002-2450232 | 20020627   |
| AU 2002325279          | A1                                                                                                                                                                                                                                                                                                                                                                 | 20030121 | AU 2002-325279  | 20020627   |
| EP 1417171             | A1                                                                                                                                                                                                                                                                                                                                                                 | 20040512 | EP 2002-758282  | 20020627   |
| EP 1417171             | B1                                                                                                                                                                                                                                                                                                                                                                 | 20071121 |                 |            |
| R:                     | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR                                                                                                                                                                                                                                                             |          |                 |            |
| CN 1522247             | A                                                                                                                                                                                                                                                                                                                                                                  | 20040818 | CN 2002-813456  | 20020627   |
| JP 2005502622          | T                                                                                                                                                                                                                                                                                                                                                                  | 20050127 | JP 2003-510639  | 20020627   |
| MX 2003PA11833         | A                                                                                                                                                                                                                                                                                                                                                                  | 20040326 | MX 2003-PA11833 | 20031218   |
| US 2004167303          | A1                                                                                                                                                                                                                                                                                                                                                                 | 20040826 | US 2003-482546  | 20031230   |
| US 6936670             | B2                                                                                                                                                                                                                                                                                                                                                                 | 20050830 |                 |            |
| PRIORITY APPLN. INFO.: |                                                                                                                                                                                                                                                                                                                                                                    |          | EP 2001-810664  | A 20010705 |
|                        |                                                                                                                                                                                                                                                                                                                                                                    |          | WO 2002-EP7131  | W 20020627 |

OTHER SOURCE(S): MARPAT 138:107153

ED Entered STN: 17 Jan 2003

AB The instant invention relates to multifunctional alkoxyamines based on polyalkylpiperidines, polyalkylpiperazinones and polyalkylmorpholinones and their use as polymerization regulators/ initiators. Further subjects of the invention are a polymerizable composition comprising an ethylenically unsatd. monomer (e.g., styrene) or oligomer and the alkoxyamine compound as well as a process for polymerization and a process for preparation of the compds.

IT 485844-67-5P 485844-69-7P 485844-70-0P  
485844-71-1P 485844-72-2P 485844-74-4P  
485844-75-5P 485844-77-7P 485844-78-8P

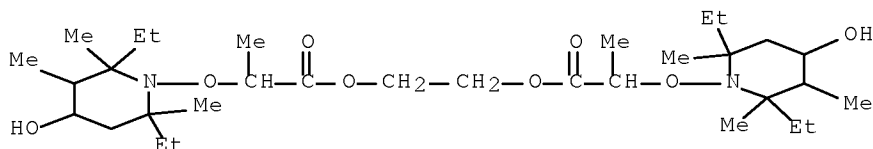
10/519,030

485844-79-9P 485844-80-2P 485844-81-3P

(multifunctional alkoxyamines based on polyalkylpiperidines,  
polyalkylpiperazinones and polyalkylmorpholinones and their use as  
polymerization regulators/initiators)

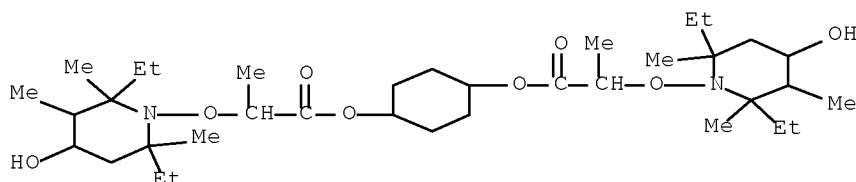
RN 485844-67-5 HCAPLUS

CN Propanoic acid, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-, 1,2-ethanediyl ester (9CI) (CA INDEX NAME)



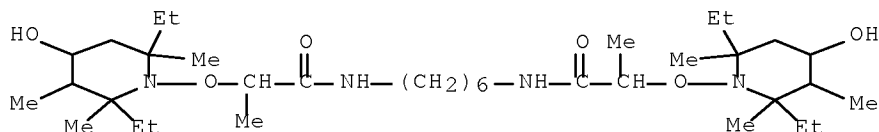
RN 485844-69-7 HCAPLUS

CN Propanoic acid, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-, 1,4-cyclohexanediyl ester (9CI) (CA INDEX NAME)



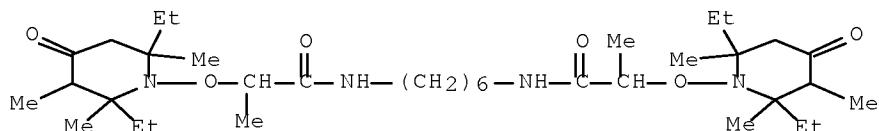
RN 485844-70-0 HCAPLUS

CN Propanamide, N,N'-1,6-hexanediylbis[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]- (CA INDEX NAME)



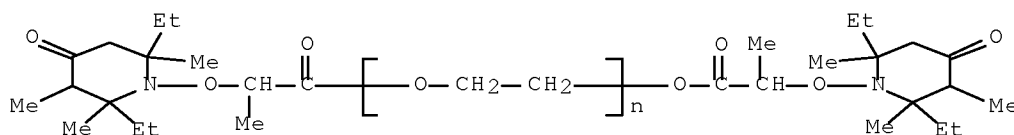
RN 485844-71-1 HCAPLUS

CN Propanamide, N,N'-1,6-hexanediylbis[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]- (CA INDEX NAME)



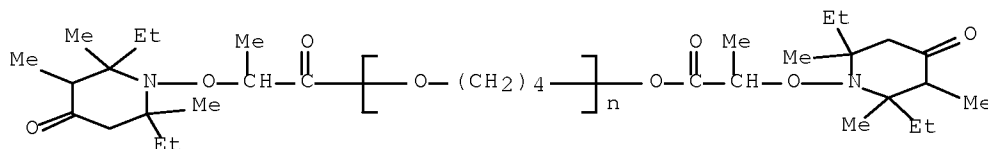
RN 485844-72-2 HCAPLUS

CN Poly(oxy-1,2-ethanediyl),  $\alpha$ -[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-1-oxopropyl]- $\omega$ -[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-1-oxopropoxy]- (9CI) (CA INDEX NAME)



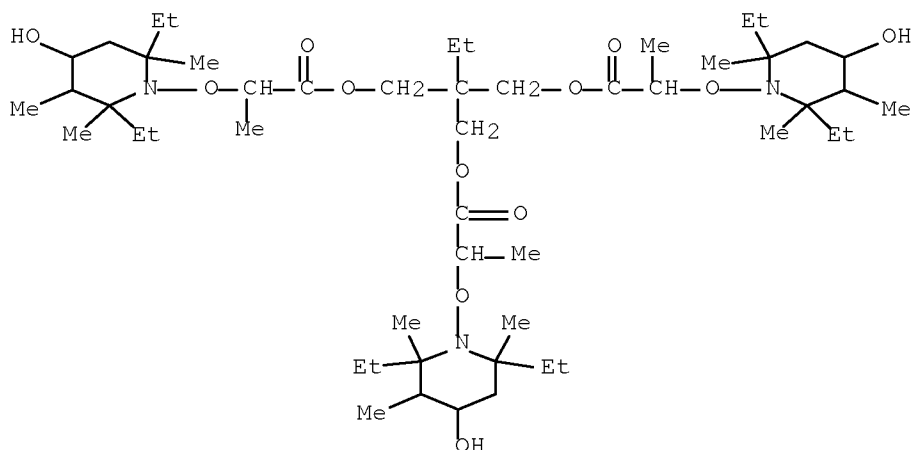
RN 485844-74-4 HCAPLUS

CN Poly(oxy-1,4-butanediyl),  $\alpha$ -[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-1-oxopropyl]- $\omega$ -[2-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]-1-oxopropoxy]- (9CI) (CA INDEX NAME)



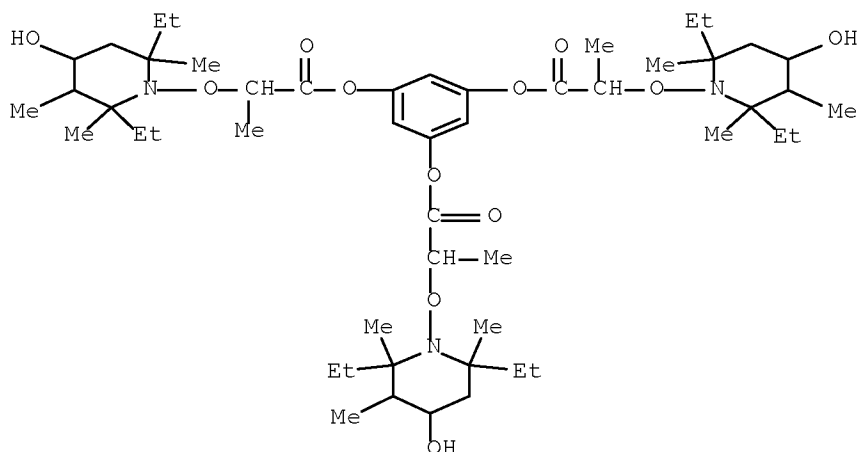
RN 485844-75-5 HCAPLUS

CN Propanoic acid, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-, 2-[[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-1-oxopropoxy]methyl]-2-ethyl-1,3-propanediyl ester (9CI) (CA INDEX NAME)



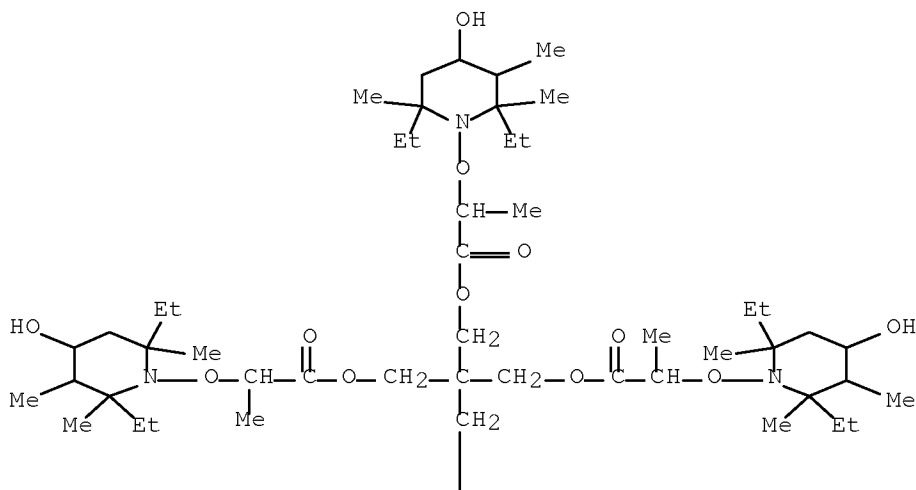
RN 485844-77-7 HCAPLUS

CN Propanoic acid, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-, 1,3,5-benzenetriyl ester (9CI) (CA INDEX NAME)

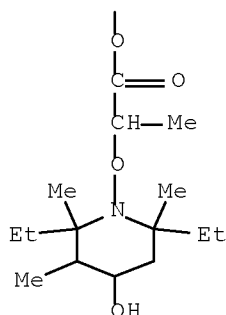


RN 485844-78-8 HCAPLUS

CN Propanoic acid, 2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-, 2,2-bis[[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]-1-oxopropoxy]methyl]-1,3-propanediyl ester (9CI) (CA INDEX NAME)



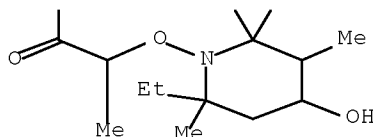
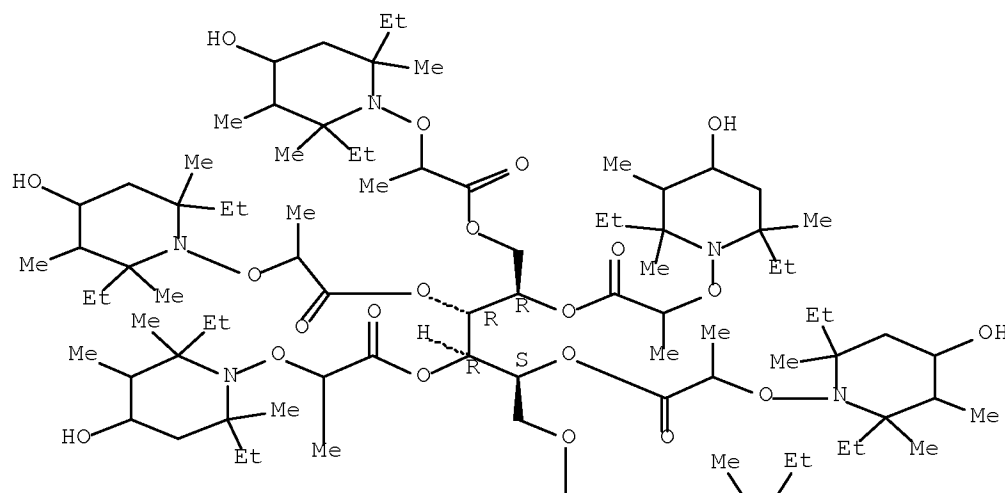
PAGE 1-A



RN 485844-79-9 HCAPLUS

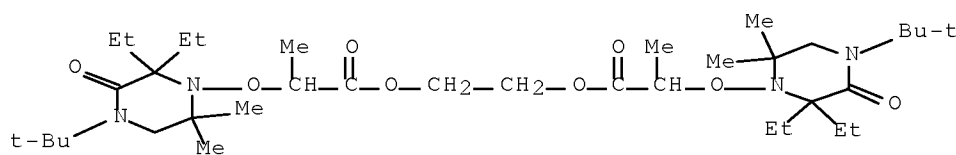
CN D-Glucitol, hexakis[2-[(2,6-diethyl-4-hydroxy-2,3,6-trimethyl-1-piperidinyl)oxy]propanoate] (9CI) (CA INDEX NAME)

Absolute stereochemistry.



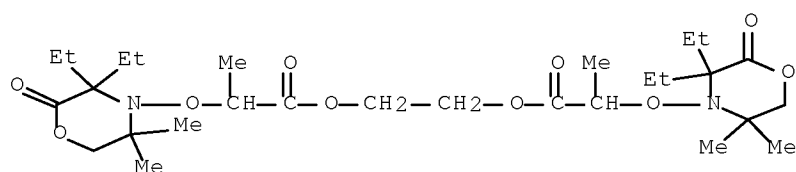
RN 485844-80-2 HCAPLUS

CN Propanoic acid, 2-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]-, 1,2-ethanediyl ester (9CI) (CA INDEX NAME)



RN 485844-81-3 HCAPLUS

CN Propanoic acid, 2-[(3,3-diethyl-5,5-dimethyl-2-oxo-4-morpholinyl)oxy]-  
, 1,2-ethanediyl ester (9CI) (CA INDEX NAME)



IC ICM C07D211-94

ICS C08F004-00; C08F002-38; C08F012-08; C08F020-18

CC 35-3 (Chemistry of Synthetic High Polymers)

ST piperidine alkyl initiator polymn; piperazinone alkyl  
initiator polymn; morpholinone alkyl initiator  
polymn

IT Polymerization catalysts

(radical; multifunctional alkoxyamines based on  
polyalkylpiperidines, polyalkylpiperazinones and  
polyalkylmorpholinones and their use as polymerization regulators/  
initiators)

IT 485844-67-5P 485844-69-7P 485844-70-0P

485844-71-1P 485844-72-2P 485844-74-4P

485844-75-5P 485844-77-7P 485844-78-8P

485844-79-9P 485844-80-2P 485844-81-3P

(multifunctional alkoxyamines based on polyalkylpiperidines,  
polyalkylpiperazinones and polyalkylmorpholinones and their use as  
polymerization regulators/initiators)

IT 9003-49-0P, Poly(n-butyl acrylate) 9003-53-6P, Polystyrene

(multifunctional alkoxyamines based on polyalkylpiperidines,  
polyalkylpiperazinones and polyalkylmorpholinones and their use as  
polymerization regulators/initiators)

IT 3030-47-5 5468-93-9 51210-48-1 61745-37-7 200192-34-3

248603-09-0 264279-68-7 264279-93-8 286470-47-1 286470-49-3

300707-30-6 485844-68-6 485844-73-3 485844-76-6

(multifunctional alkoxyamines based on polyalkylpiperidines,  
polyalkylpiperazinones and polyalkylmorpholinones and their use as  
polymerization regulators/initiators)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT



10/519,030

ACCESSION NUMBER: 2002:964328 HCAPLUS Full-text  
DOCUMENT NUMBER: 138:39710  
TITLE: N-alkoxy 4-imino piperidine polymerization  
regulators and their use in free radical-mediated  
polymerization of vinyl monomers to low dispersity  
polymers  
INVENTOR(S): Nesvadba, Peter; Hintermann, Tobias; Kramer,  
Andreas; Zink, Marie-Odile; Bugnon, Lucienne  
PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.  
SOURCE: PCT Int. Appl., 51 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.                                                                                                                                                                                                                                                                                                                                                            | KIND | DATE     | APPLICATION NO. | DATE       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-----------------|------------|
| WO 2002100831                                                                                                                                                                                                                                                                                                                                                         | A1   | 20021219 | WO 2002-EP6108  | 20020604   |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW |      |          |                 |            |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG                                                                                                                                                                    |      |          |                 |            |
| CA 2443718                                                                                                                                                                                                                                                                                                                                                            | A1   | 20021219 | CA 2002-2443718 | 20020604   |
| AU 2002328806                                                                                                                                                                                                                                                                                                                                                         | A1   | 20021223 | AU 2002-328806  | 20020604   |
| EP 1397349                                                                                                                                                                                                                                                                                                                                                            | A1   | 20040317 | EP 2002-764577  | 20020604   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR                                                                                                                                                                                                                                                             |      |          |                 |            |
| CN 1514827                                                                                                                                                                                                                                                                                                                                                            | A    | 20040721 | CN 2002-811633  | 20020604   |
| JP 2005502601                                                                                                                                                                                                                                                                                                                                                         | T    | 20050127 | JP 2003-503600  | 20020604   |
| MX 2003PA10132                                                                                                                                                                                                                                                                                                                                                        | A    | 20040310 | MX 2003-PA10132 | 20031106   |
| US 2004176553                                                                                                                                                                                                                                                                                                                                                         | A1   | 20040909 | US 2003-480188  | 20031209   |
| US 7199245                                                                                                                                                                                                                                                                                                                                                            | B2   | 20070403 |                 |            |
| PRIORITY APPLN. INFO.:                                                                                                                                                                                                                                                                                                                                                |      |          | EP 2001-810567  | A 20010613 |
|                                                                                                                                                                                                                                                                                                                                                                       |      |          | EP 2001-811154  | A 20011128 |
|                                                                                                                                                                                                                                                                                                                                                                       |      |          | WO 2002-EP6108  | W 20020604 |

OTHER SOURCE(S): MARPAT 138:39710

ED Entered STN: 20 Dec 2002

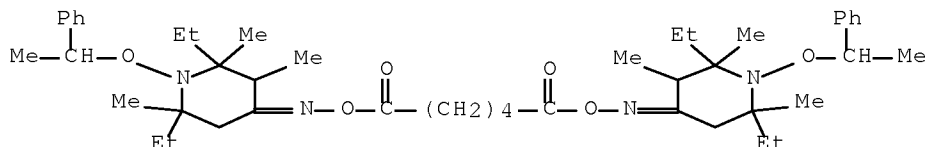
AB The present invention relates to selected 4-imino-N-alkoxy-polyalkyl-piperidine compds. preparation, a polymerizable composition comprising a) at least one ethylenically unsatd. monomer and b) a 4-imino-N-alkoxy- polyalkyl-piperidine compound Further aspects of the present invention are a process for polymerizing ethylenically unsatd. monomers, and the use of 4-imino-N-alkoxy-polyalkyl-piperidine compds. for controlled polymerization The intermediate N-oxyl derivs., a composition of the N-oxyl derivs. with ethylenically unsatd. monomers and a free radical initiator, as well as a process for polymerization are also subjects of the present invention.

IT 478697-58-4P

(preparation of N-alkoxy 4-imino piperidine polymerization regulators and their use in free radical-mediated vinyl monomer polymerization to low

dispersity polymers)

RN 478697-58-4 HCAPLUS

CN 4-Piperidinone, 2,6-diethyl-2,3,6-trimethyl-1-(1-phenylethoxy)-,  
O,O'-(1,6-dioxo-1,6-hexanediyl)dioxime (9CI) (CA INDEX NAME)

IC ICM C07D211-94

ICS C08F004-00

CC 35-3 (Chemistry of Synthetic High Polymers)

IT 478697-27-7P 478697-34-6P 478697-38-0P 478697-40-4P

478697-42-6P 478697-44-8P 478697-47-1P 478697-49-3P

478697-53-9P 478697-55-1P 478697-58-4P 478697-60-8P

478697-62-0P 478697-65-3P 478697-67-5P

(preparation of N-alkoxy 4-imino piperidine polymerization regulators and

their

use in free radical-mediated vinyl monomer polymerization to low  
dispersity polymers)REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L69 ANSWER 15 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:868581 HCAPLUS Full-text

DOCUMENT NUMBER: 138:137635

TITLE: Synthesis of six-arm star polymer by  
nitroxide-mediated "living" radical polymerization

AUTHOR(S): Miura, Yozo; Yoshida, Yuji

CORPORATE SOURCE: Department of Applied Chemistry, Graduate School  
of Engineering, Osaka City University, Osaka,  
558-8585, JapanSOURCE: Polymer Journal (Tokyo, Japan) (2002), 34(10),  
748-754

CODEN: POLJB8; ISSN: 0032-3896

PUBLISHER: Society of Polymer Science, Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 15 Nov 2002

AB A dendritic multifunctional initiator with six TEMPO-based alkoxyamine moieties was prepared from 4-bromoethylbenzene in seven steps. Six-arm star polymers were synthesized by the radical bulk polymerization of styrene using the dendritic alkoxyamine as an initiator. The styrene polymers were carried out at 120° using the dendritic alkoxyamine concns. of 5.0, 12.8 and 18.8 mmol/L. When the alkoxyamine concentration was 5.0 mmol/L, the polydispersity of the resulting star polymers increased with conversion, and the polydispersity of the star polymer at 72% conversion was 1.59. When the alkoxyamine concns. were 12.8 and 18.8 mmol/L, the polymerization was well controlled to give star polymers with low polydispersity even at high conversions. Mol. weight of the star polymers determined by NMR significantly differed from GPC and light scattering detns. and was attributed to the unique structure of the polymers. The six-arm polystyrene synthesis showed features of the living polymerization with some side reactions at high monomer

conversion. The deviations from the living polymerization character were discussed on the basis of GPC elution curves of the star polymers.

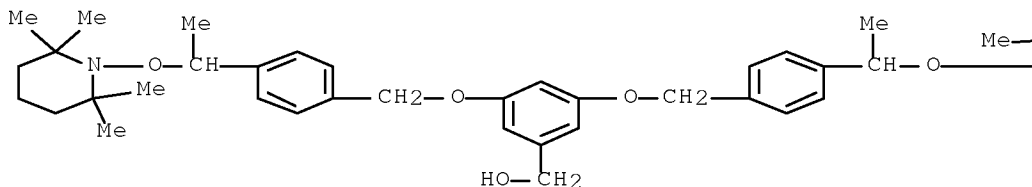
IT 492446-77-2P 492446-78-3P

(in synthesis of multifunctional TEMPO-based radical initiators for production of six-arm star polymers)

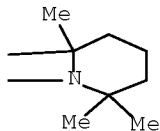
RN 492446-77-2 HCAPLUS

CN Benzenemethanol, 3,5-bis[[4-[1-[(2,2,6,6-tetramethyl-1-piperidinyloxy)ethyl]phenyl]methoxy]- (CA INDEX NAME)

PAGE 1-A



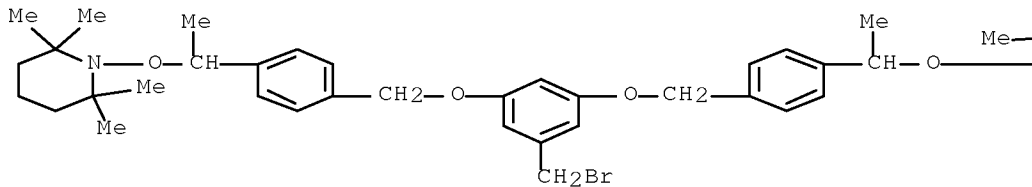
PAGE 1-B

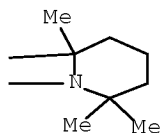


RN 492446-78-3 HCAPLUS

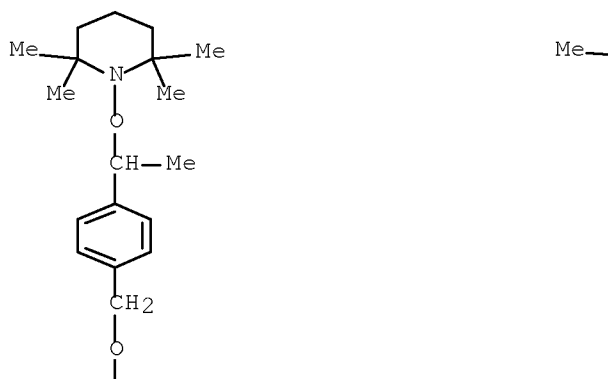
CN Piperidine, 1,1'-[[5-(bromomethyl)-1,3-phenylene]bis(oxymethylene-4,1-phenyleneethylideneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

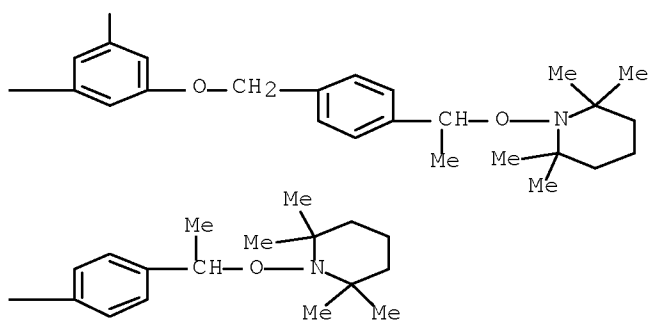
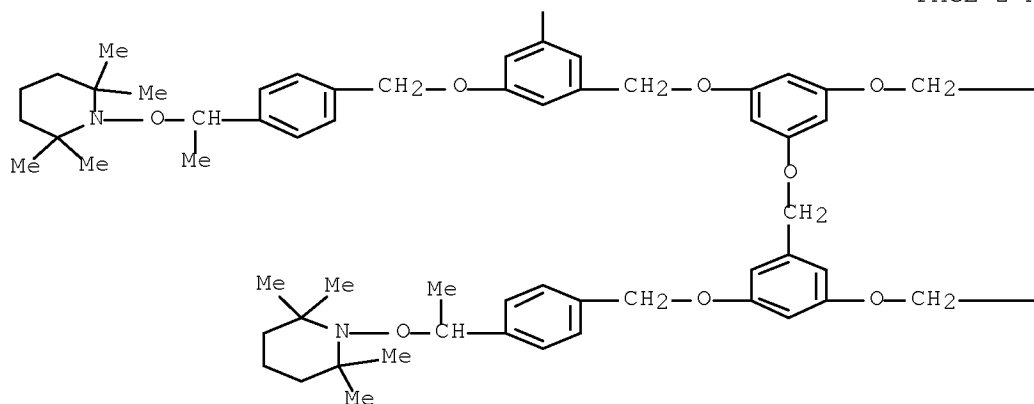
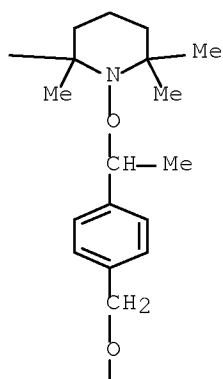
PAGE 1-A





IT 492446-79-4P  
 (synthesis of multifunctional TEMPO-based radical  
 initiators for production of six-arm star polymers)  
 RN 492446-79-4 HCAPLUS  
 CN Piperidine, 1,1',1'',1''',1'''',1'''''-[1,3,5-  
 benzenetriyltris[oxymethylene-5,1,3-benzenetriylbis(oxymethylene-4,1-  
 phenyleneethylideneoxy)]]hexakis[2,2,6,6-tetramethyl- (9CI) (CA INDEX  
 NAME)





CC 35-3 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 67

ST multifunctional radical living catalyst star polymer  
 synthesis

IT Polymerization  
 (living, radical, bulk; multifunctional TEMPO-based radical  
 initiators for synthesis of six-arm star polymers)

IT Polymerization catalysts  
 (living, radical; multifunctional TEMPO-based radical  
 initiators for synthesis of six-arm star polymers)

IT NMR (nuclear magnetic resonance)  
 Size-exclusion chromatography  
 (mol. structure determination of six-arm star polymers produced using  
 multifunctional TEMPO-based radical initiators)

IT Coupling reaction  
 (star-star coupling; synthesis of six-arm star polymers using  
 multifunctional TEMPO-based radical initiators)

IT Molecular structure-property relationship  
 (synthesis of six-arm star polymers using multifunctional  
 TEMPO-based radical initiators)

IT 584-08-7, Potassium carbonate  
 (in synthesis of multifunctional TEMPO-based radical  
 initiators for production of six-arm star polymers)

IT 492446-76-1P 492446-77-2P 492446-78-3P  
 (in synthesis of multifunctional TEMPO-based radical  
 initiators for production of six-arm star polymers)

IT 68-12-2, DMF, reactions 108-73-6, 1,3,5-Benzenetriol 558-13-4,  
 Carbon tetrabromide 1585-07-5, 4-Bromoethylbenzene 2564-83-2,  
 TEMPO 7789-60-8, Phosphorous tribromide 16940-66-2, Sodium  
 borohydride 29654-55-5, 3,5-Dihydroxybenzyl alcohol  
 (in synthesis of multifunctional TEMPO-based radical  
 initiators for production of six-arm star polymers)

IT 178625-97-3P 209550-23-2P 209550-24-3P  
 (in synthesis of multifunctional TEMPO-based radical  
 initiators for production of six-arm star polymers)

IT 594-19-4, tert-Butyllithium 603-35-0, Triphenylphosphine, reactions  
 1876-22-8, Di-tert-butyl diperoxyoxalate 17455-13-9, 18-Crown-6  
 (in synthesis of multifunctional TEMPO-based radical  
 initiators for production of six-arm star polymers)

IT 9003-53-6P, Polystyrene  
 (star, six-arm; multifunctional TEMPO-based radical  
 initiators for synthesis of six-arm star polymers)

IT 492446-79-4P  
 (synthesis of multifunctional TEMPO-based radical  
 initiators for production of six-arm star polymers)

REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L69 ANSWER 16 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:626615 HCAPLUS Full-text

DOCUMENT NUMBER: 137:338264

TITLE: Synthesis of end-functionalized polymer with  
 cyclodextrin based on tempo-mediated radical  
 polymerization

AUTHOR(S): Narumi, Atsushi; Miura, Yutaka; Satoh, Toshifumi;  
 Kaga, Harumi; Kakuchi, Toyoji

CORPORATE SOURCE: Div. Molecular Chem., Grad. Sch. Eng., Hokkaido  
 Univ., Sapporo, 060-8628, Japan

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(2), 279-280  
 CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

ED Entered STN: 20 Aug 2002

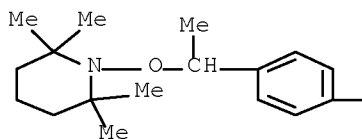
AB Polystyrene was end-functionalized with a cyclic oligosacchamide, cyclodextrin (CD). First, mono-6-[4-[1'-(2'',2'',6'',6''-tetramethyl-1''-piperidinyloxy)ethyl]benzamido]-per-2,3,6-acetyl- $\beta$ -cyclodextrin was prepared and was used as initiator to polymerize styrene. The resulting polymer was deacetylated. A reversed-type micelle using the polymer with the  $\beta$ -CD core was prepared

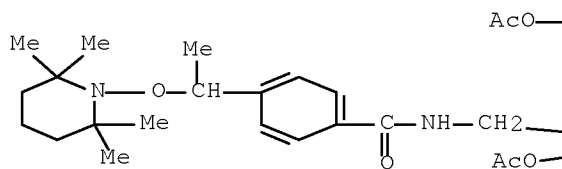
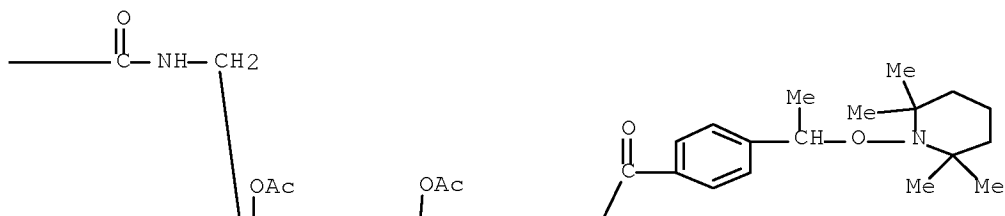
IT 474088-71-6P  
 (catalyst; in preparation of end-functionalized polymer with cyclodextrin based on tempo-mediated radical polymerization)

RN 474088-71-6 HCAPLUS

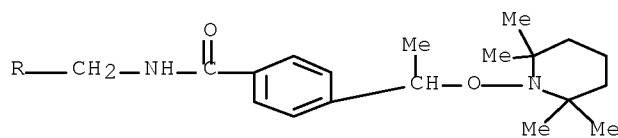
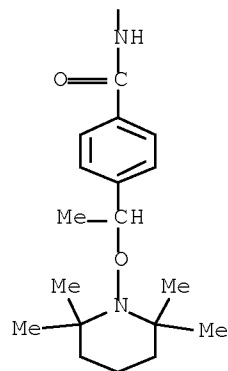
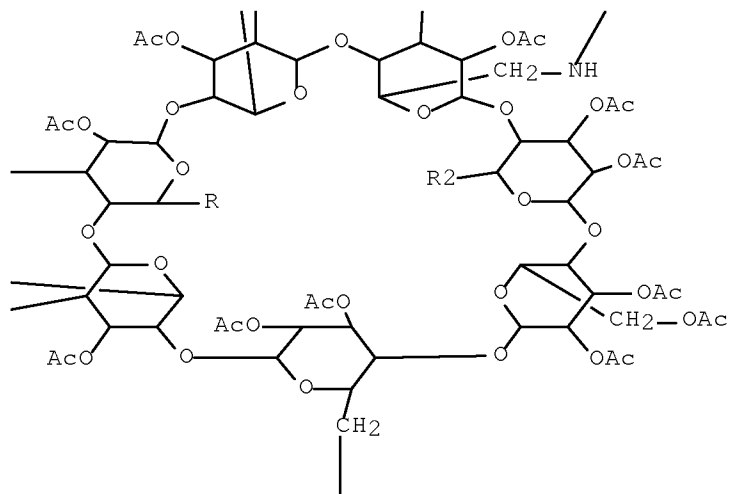
CN  $\beta$ -Cyclodextrin, 6A,6B,6C,6D,6E,6F-hexadeoxy-6A,6B,6C,6D,6E,6F-hexakis[[4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]benzoyl]amino]-, 2A,2B,2C,2D,2E,2F,2G,3A,3B,3C,3D,3E,3F,3G,6G-pentadecaacetate (9CI) (CA INDEX NAME)

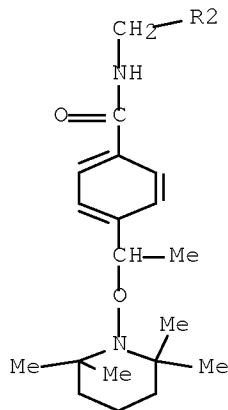
PAGE 1-A









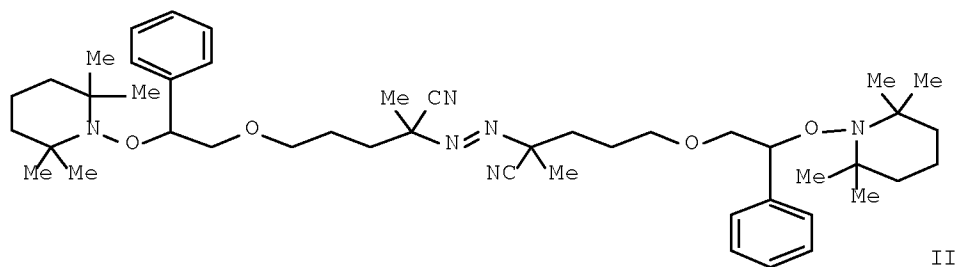


CC 35-4 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 44  
 IT Polymerization catalysts  
 (living, radical; in preparation of end-functionalized polymer with  
 cyclodextrin based on tempo-mediated radical polymerization)  
 IT 474088-71-6P  
 (catalyst; in preparation of end-functionalized polymer with  
 cyclodextrin based on tempo-mediated radical polymerization)  
 REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
 RE FORMAT

L69 ANSWER 17 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2002:354020 HCAPLUS Full-text  
 DOCUMENT NUMBER: 136:370147  
 TITLE: Soluble polymer supports for organic synthesis  
 INVENTOR(S): Janda, Kim D.; Gravert, Dennis J.  
 PATENT ASSIGNEE(S): The Scripps Research Institute, USA  
 SOURCE: U.S. Pat. Appl. Publ., 34 pp., Cont. of U.S. Ser.  
 No. 161,604.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE        |
|------------------------|------|----------|-----------------|-------------|
| -----                  | ---- | -----    | -----           | -----       |
| US 2002055124          | A1   | 20020509 | US 2001-996402  | 20011119    |
| PRIORITY APPLN. INFO.: |      |          | US 1998-161604  | A1 19980923 |

ED Entered STN: 12 May 2002  
 GI



II

AB Polymer supports for liquid-phase organic synthesis (LPOS) are employed in a process for transferring a chemical intermediate between immiscible solvents. These compds. are produced with an expanded range of solubility range in a variety of solvent systems. A sequence of normal and "living" free radical polymers are employed to generate a library of block copolymers possessing either block or graft architecture with initiators having N:N and TEMPO groups tethered by ester or ether linkages for styrene, 4-tert-butylstyrene (I), 3,4-dimethoxystyrene, vinylpyrrolidinone, N-isopropylacrylamide, and 1-methacryloyloxy-2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidin-1-yl)oxy]ethane. A typical block copolymer was manufactured by polymerization of 7.75 mmol styrene 8 h at 70° in 1,2-dichlorobenzene in the presence of initiator II, and polymerization of 1.08 mmol I 12 h at 130° in the presence of 1.02 mg intermediate.

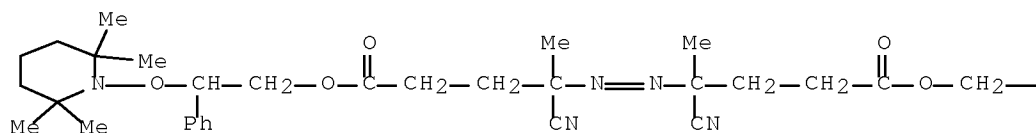
IT 188119-33-7P 203382-60-9P 213994-38-8P

(polymerization initiator; soluble graft and block styrene  
(derivative)-based polymer supports for organic synthesis)

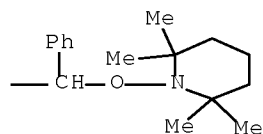
RN 188119-33-7 HCAPLUS

CN Pentanoic acid, 4,4'-azobis[4-cyano-, bis[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidin-1-yl)oxy]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



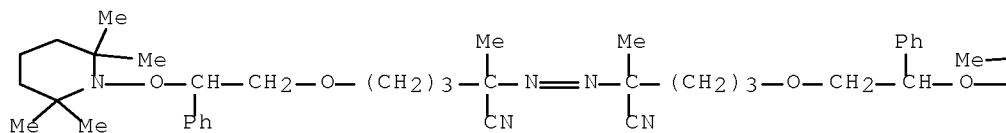
RN 203382-60-9 HCAPLUS

CN Pentanenitrile, 2,2'-azobis[2-methyl-5-[2-phenyl-2-[(2,2,6,6-

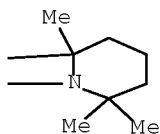
10/519,030

tetramethyl-1-piperidinyloxy]ethoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



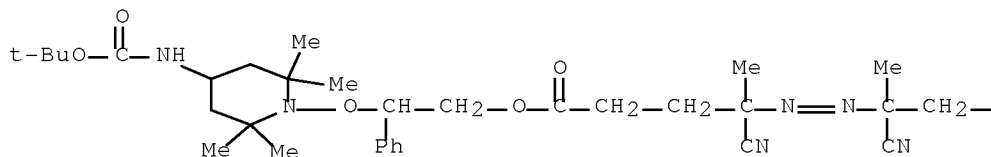
PAGE 1-B



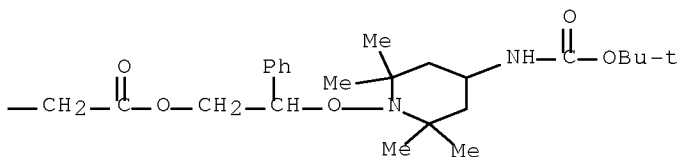
RN 213994-38-8 HCAPLUS

CN Pentanoic acid, 4,4'-azobis[4-cyano-, bis[2-[[4-[[[(1,1-dimethylethoxy)carbonyl]amino]-2,2,6,6-tetramethyl-1-piperidinyloxy]-2-phenylethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM G01N033-53

ICS G01N033-543; C08F008-30; C08F008-44; C08F008-32

INCL 435007100

CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 23

ST soluble block graft polymer support combinatorial library org  
synthesis; methacryloyloxyphenyl tetramethylpiperidinyloxyethane

polymer manuf; isopropylacrylamide block polymer manuf TEMPO azo  
 initiator; vinylpyrrolidinone block polymer manuf TEMPO azo  
 initiator; dimethoxystyrene block polymer manuf TEMPO azo  
 initiator; styrene tertiary butylstyrene block copolymer manuf  
 TEMPO azo initiator

- IT Hydrogenation catalysts  
 (polymer-supported; soluble graft and block styrene (derivative)-based  
 polymer supports for organic synthesis)
- IT 108-55-4, Glutaric anhydride 61478-29-3  
 (hydrogenation catalyst precursor; soluble graft and block  
 styrene (derivative)-based polymer supports for organic synthesis)
- IT 12092-47-6  
 (hydrogenation catalyst; soluble graft and block styrene  
 (derivative)-based polymer supports for organic synthesis)
- IT 213994-93-5P  
 (hydrogenation catalyst; soluble graft and block styrene  
 (derivative)-based polymer supports for organic synthesis)
- IT 213994-43-5P 213994-50-4P 423126-07-2P  
 (polymerization initiator precursor; soluble graft and block  
 styrene (derivative)-based polymer supports for organic synthesis)
- IT 94-36-0, Benzoyl peroxide, reactions 100-42-5, Styrene, reactions  
 2564-83-2, TEMPO 2638-94-0, 4,4'-Azobis(cyanovaleric acid)  
 14691-88-4, 4-Amino-TEMPO 17170-81-9, 4,4'-Azobis(4-cyanovaleroyl  
 chloride) 24424-99-5, Di-tert-butyl dicarbonate  
 (polymerization initiator precursor; soluble graft and block  
 styrene (derivative)-based polymer supports for organic synthesis)
- IT 188119-33-7P 203382-60-9P 213994-38-8P  
 (polymerization initiator; soluble graft and block styrene  
 (derivative)-based polymer supports for organic synthesis)
- IT 161776-41-6  
 (reactive polymerization initiator precursor; soluble graft and  
 block styrene (derivative)-based polymer supports for organic synthesis)
- IT 213994-57-1P  
 (reactive polymerization initiator; soluble graft and block styrene  
 (derivative)-based polymer supports for organic synthesis)

L69 ANSWER 18 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:311344 HCAPLUS Full-text

DOCUMENT NUMBER: 137:79284

TITLE: Syntheses of functional alkoxyamines and  
 application to syntheses of well-defined star  
 polymers

AUTHOR(S): Miura, Yozo; Yoshida, Yuji

CORPORATE SOURCE: Department of Applied Chemistry, Graduate School  
 of Engineering, Osaka City University, Osaka,  
 558-8585, Japan

SOURCE: Macromolecular Chemistry and Physics (2002),  
 203(5/6), 879-888

CODEN: MCHPES; ISSN: 1022-1352

PUBLISHER: Wiley-VCH Verlag GmbH

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 25 Apr 2002

AB Three kinds of 2,2,6,6-tetramethylpiperidine-N-oxyl (TEMPO)-based  
 alkoxyamines, 1-(4-iodophenyl)-(3), 1-(4-ethynylphenyl)-(4), and 1-[4-(1, 3,  
 2-dioxaborinan-2-yl)phenyl]-1-(2,2,6,6-tetramethyl-1- piperidinyloxy)ethanes  
 (5) were prepared. The Pd-catalyzed cross-coupling reaction of 3 with 1,3,5-  
 triethynylbenzene or 1,3,5-tribromobenzene with 4 gave the corresponding  
 1,3,5-tris(alkoxyaminophenylethynyl)benzene 11, and the Pd-catalyzed cross-  
 coupling reaction of 5 with 1,3,5-tribromobenzenegave the corresponding 1,3,5-

tris(alkoxyaminophenyl)benzene 12. Bulk polymerization of styrene (St) at 120°C initiated with 11 and 12 were investigated. The first-order plots, linear relationships between and conversion, and low Mw/Mns of the formed poly(St) showed that the polymerization proceeded in the "living" fashion leading to formation of well-defined three-arm star polymers with Mw/Mn of 1.20-1.40.

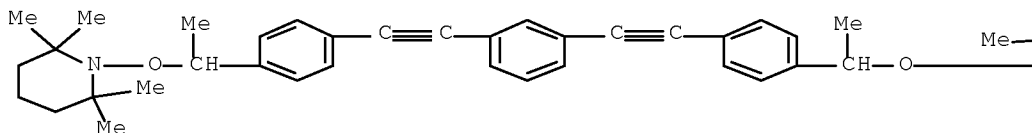
IT 439904-91-3P 439904-92-4P 439904-93-5P  
439904-94-6P

(polymerization initiator; syntheses of TEMPO-based functional alkoxyamines and their application to syntheses of well-defined star polystyrenes)

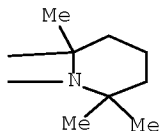
RN 439904-91-3 HCAPLUS

CN Piperidine, 1,1'-[1,3-phenylenebis(2,1-ethynediyl-4,1-phenyleneethylideneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

PAGE 1-A

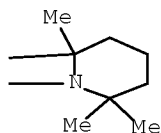
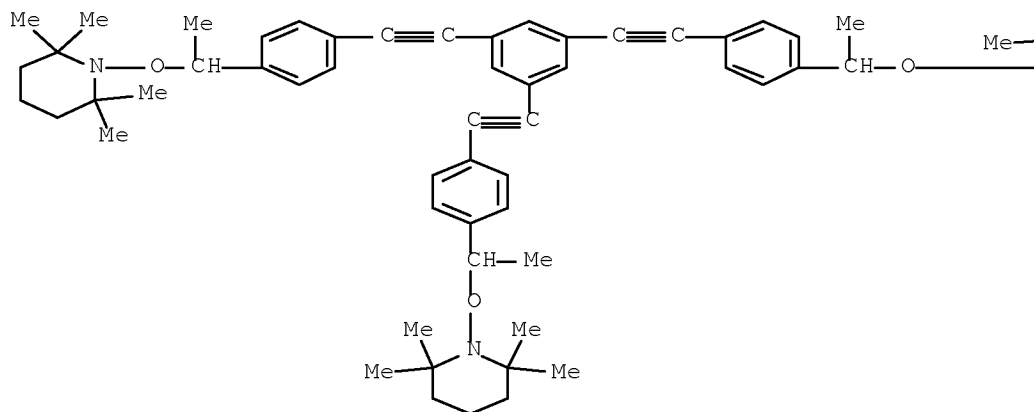


PAGE 1-B



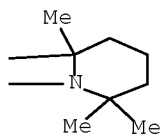
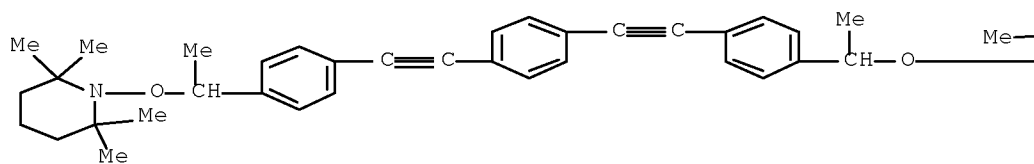
RN 439904-92-4 HCAPLUS

CN Piperidine, 1,1',1''-[1,3,5-benzenetriyltris(2,1-ethynediyl-4,1-phenyleneethylideneoxy)]tris[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

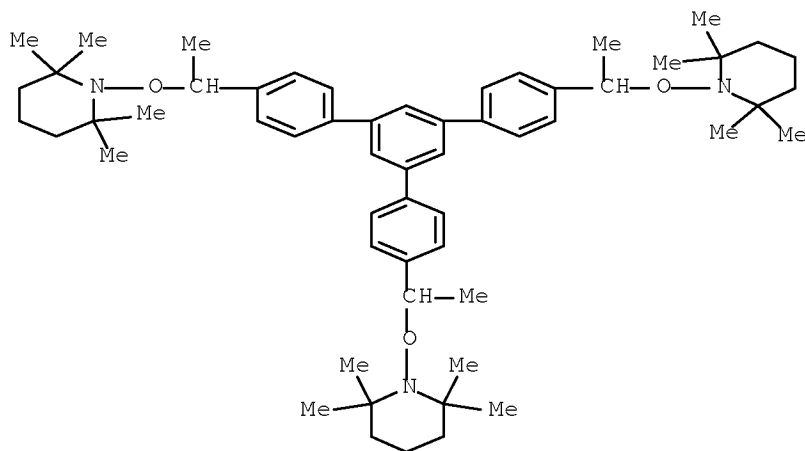


RN 439904-93-5 HCAPLUS

CN Piperidine, 1,1'-[1,4-phenylenebis(2,1-ethynediyl-4,1-phenyleneethylenedioxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



RN 439904-94-6 HCAPLUS  
 CN Piperidine, 1,1'-[[5'-[4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]phenyl][1,1':3',1''-terphenyl]-4,4''-diyl]bis(ethylideneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST TEMPO based alkoxyamine synthesis styrene living polymn initiation  
 IT Amines, preparation  
 (alkoxylated, polymerization initiators; syntheses of TEMPO-based functional alkoxyamines and their application to syntheses of well-defined star polystyrenes)  
 IT Polymerization catalysts  
 (atom transfer, living, radical; syntheses of TEMPO-based functional alkoxyamines and their application to syntheses of well-defined star polystyrenes)  
 IT 154554-67-3  
 (polymerization initiator; syntheses of TEMPO-based functional alkoxyamines and their application to syntheses of well-defined star polystyrenes)  
 IT 439904-91-3P 439904-92-4P 439904-93-5P 439904-94-6P  
 (polymerization initiator; syntheses of TEMPO-based functional alkoxyamines and their application to syntheses of well-defined star polystyrenes)  
 REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 19 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2002:232041 HCAPLUS Full-text  
 DOCUMENT NUMBER: 137:20656  
 TITLE: Synthesis and characterization of star-shaped polystyrene having  $\beta$ -cyclodextrin-core  
 AUTHOR(S): Sugimoto, Naoya; Matsuda, Takeshi; Miura, Yutaka; Narumi, Atsushi; Kaga, Harumi; Kakuchi, Toyoji



CORPORATE SOURCE: Div. Molecular Chem., Grad. Sch. Eng., Hokkaido Univ., Sapporo, 060-8628, Japan

SOURCE: Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2002), 43(1), 664-665  
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English

ED Entered STN: 27 Mar 2002

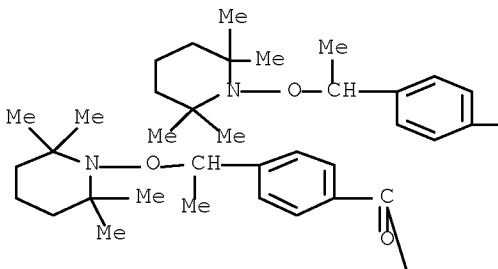
AB A cyclodextrin-based multifunctional initiator was prepared from amino-cyclodextrin and N-(1-methyl-4-carboxylbenzyloxy)-2,2,6,6-tetramethylpiperidine. Polymerization of styrene (St) was conducted by atom transfer radical polymerization using cyclodextrin-based multifunctional initiator.

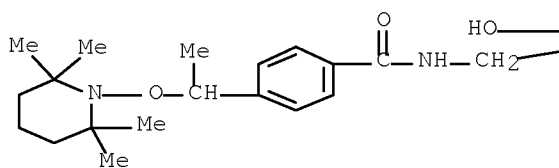
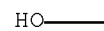
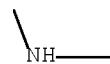
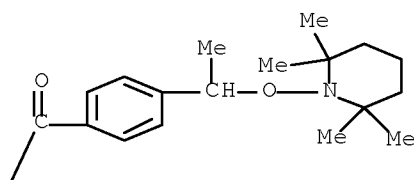
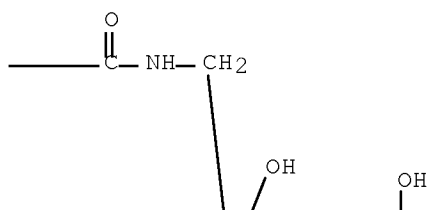
IT 434318-35-1F  
(initiator; in preparation and characterization of star-shaped polystyrene having  $\beta$ -cyclodextrin-core)

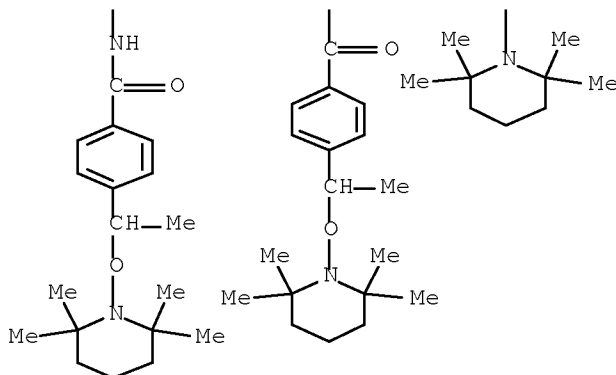
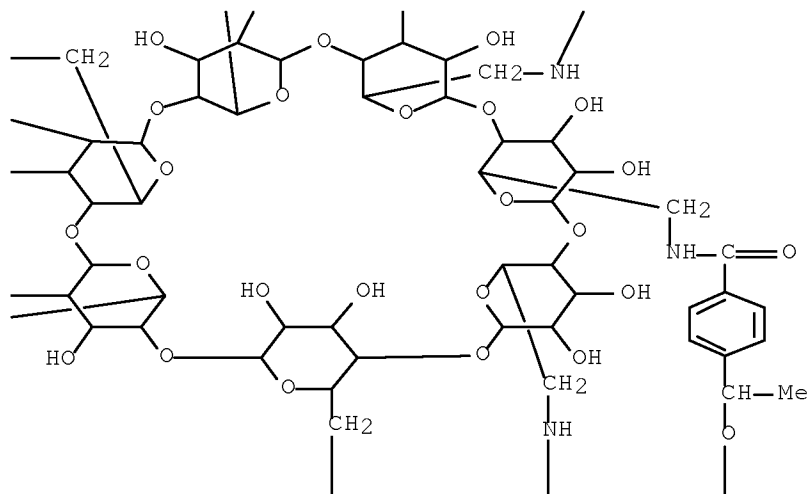
RN 434318-35-1 HCAPLUS

CN  $\beta$ -Cyclodextrin, 6A,6B,6C,6D,6E,6F,6G-heptadeoxy-6A,6B,6C,6D,6E,6F,6G-heptakis[[4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]benzoyl]amino]- (9CI) (CA INDEX NAME)

PAGE 1-A







- CC 35-4 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 44
- ST cyclodextrin based multifunctional ATRP initiator prepn;  
star shaped polystyrene cyclodextrin core prepn
- IT Polymerization  
Polymerization catalysts  
(atom transfer, radical; in preparation and characterization of  
star-shaped polystyrene having  $\beta$ -cyclodextrin-core)
- IT 434318-35-1P  
(initiator; in preparation and characterization of star-shaped  
polystyrene having  $\beta$ -cyclodextrin-core)
- IT 9003-53-6DP, Poly(styrene), initiated by  $\beta$ -cyclodextrin  
based multifunctional TEMPO initiator  
(star-shaped; synthesis and characterization of star-shaped  
polystyrene having  $\beta$ -cyclodextrin-core)
- REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L69 ANSWER 20 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2002:182192 HCAPLUS Full-text  
 DOCUMENT NUMBER: 136:217209  
 TITLE: Dual purpose electroactive copolymers, preparation thereof, and use in opto-electronic devices  
 INVENTOR(S): Hawker, Craig Jon; Klaerner, Gerrit; Lee, Jeong-Ik; Lee, Victor Yee-Way; Miller, Robert Dennis; Scott, John Campbell  
 PATENT ASSIGNEE(S): International Business Machines Corporation, USA; The Board of Trustees of the Leland Stanford Junior University  
 SOURCE: U.S., 19 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE        |
|------------------------|------|----------|-----------------|-------------|
| -----                  | ---- | -----    | -----           | -----       |
| US 6355756             | B1   | 20020312 | US 1999-313903  | 19990518    |
| US 2001024738          | A1   | 20010927 | US 2001-819119  | 20010327    |
| US 6433115             | B2   | 20020813 |                 |             |
| US 2002045719          | A1   | 20020418 | US 2001-819116  | 20010327    |
| US 6512070             | B2   | 20030128 |                 |             |
| PRIORITY APPLN. INFO.: |      |          | US 1999-313903  | A3 19990518 |

ED Entered STN: 14 Mar 2002

AB A process for preparing a dual purpose electroactive copolymer comprised of charge transport polymeric segments and a light emitting polymeric segment comprises: (a) contacting a dihalo-substituted polycyclic aromatic reactant with a living free radical polymerization initiator under conditions effective to bring about polymerization, resulting in a light emitting polymeric intermediate comprised of linked polycyclic aromatic monomer units and two or more displaceable termini; and (b) synthesizing a charge transport polymeric segment comprised of polymerized charge transporting monomer units at each of the displaceable termini, via living free radical polymerization. The copolymers may be A-B-A triblock copolymers, brush-type graft copolymers, or variations thereof.

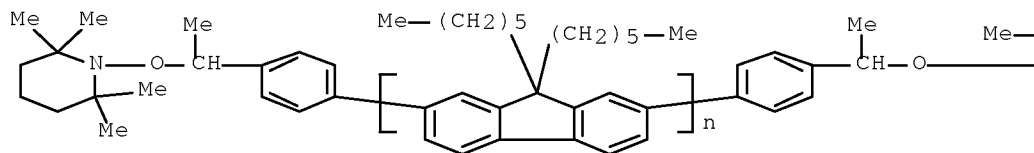
IT 402829-52-1P

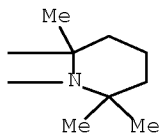
(dual purpose electroactive copolymers, preparation thereof, and use in opto-electronic devices)

RN 402829-52-1 HCAPLUS

CN Poly(9,9-dihexyl-9H-fluorene-2,7-diyl),  $\alpha,\omega$ -bis[4-[1-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl]phenyl]- (9CI) (CA INDEX NAME)

PAGE 1-A



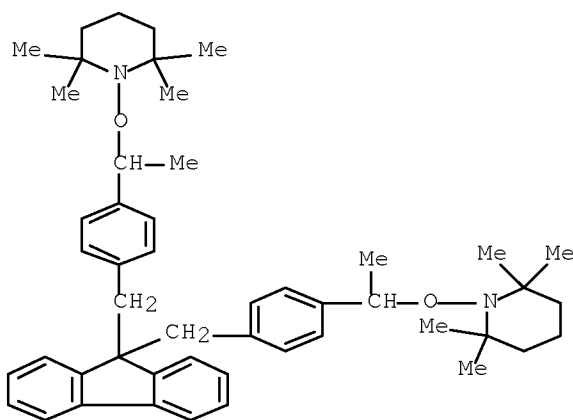


IT 402829-51-0P

(dual purpose electroactive copolymers, preparation thereof, and use in opto-electronic devices)

RN 402829-51-0 HCAPLUS

CN Piperidine, 1,1'-[9H-fluoren-9-ylidenebis(methylene-4,1-phenyleneethyldeneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



IC ICM C08F112-06

INCL 526347100

CC 35-4 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 73

IT Polymerization catalysts

(living, radical; dual purpose electroactive copolymers, preparation thereof, and use in opto-electronic devices)

IT 9003-53-6DP, Polystyrene, reaction products with fluorenyl piperidine derivs. 25067-59-8DP, N-Vinylcarbazole homopolymer, reaction products with piperidinyloxy compds. 201807-75-2DP, TEMPO-functionalized 225936-03-8P 362524-25-2DP, TEMPO-functionalized 402829-49-6P 402829-50-9P 402829-52-1P

(dual purpose electroactive copolymers, preparation thereof, and use in opto-electronic devices)

IT 236092-91-4P 402829-51-0P

(dual purpose electroactive copolymers, preparation thereof, and use in opto-electronic devices)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L69 ANSWER 21 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:629050 HCAPLUS Full-text

DOCUMENT NUMBER: 135:358194

TITLE: Synthesis of three- and six-arms polystyrene via living/controlled free radical polymerization

AUTHOR(S): Chessa, G.; Scrivanti, A.; Matteoli, U.;  
Castelvetto, V.

CORPORATE SOURCE: Dipartimento di Chimica, Universita di Venezia,  
Venice, 30123, Italy

SOURCE: Polymer (2001), 42(23), 9347-9353

CODEN: POLMAG; ISSN: 0032-3861

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 30 Aug 2001

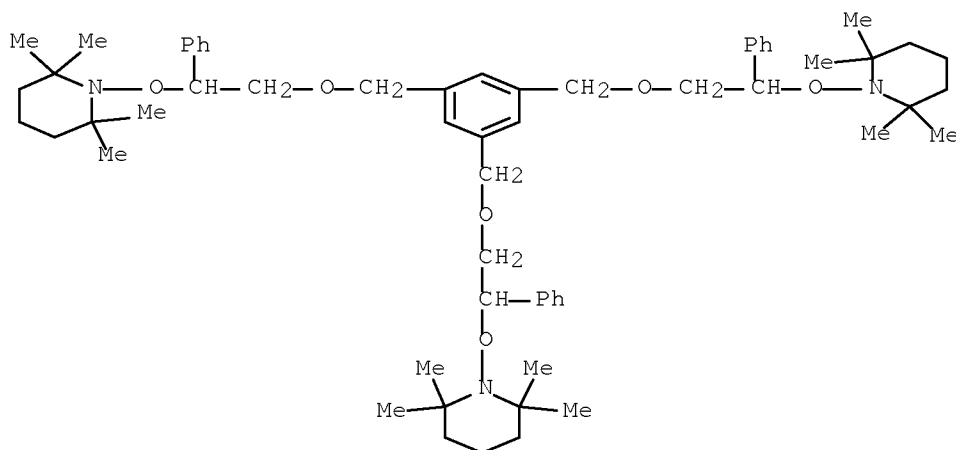
AB Three new polyfunctional TEMPO-based initiators have been synthesized by reaction of some mesitylene cores and 2,2,6,6-tetramethyl-1-(2-hydroxy-1-phenylethoxy)-piperidine. They have been employed in the living/controlled radical polymerization of styrene to provide three- and six-arm star macromols. These polymers have mol. weight ranging from 6000 to 11000 g/mol and narrow mol. weight distributions (PD<1.3). Cleavage of the link between the core and the arms was achieved, using a two-step sequence implying the preliminary removal of the TEMPO chain ends followed by catalytic hydrogenolysis. The dimensions of the individual arms so obtained closely match the values expected from the styrene/initiator molar ratio in the polymerization feed.

IT 372522-45-7P 372522-46-8P 372522-47-9P

(synthesis of three- and six-arm polystyrene via living/controlled free radical polymerization)

RN 372522-45-7 HCAPLUS

CN Piperidine, 1,1',1''-[1,3,5-benzenetriyltris[methyleneoxy(1-phenyl-2,1-ethanediyl)oxy]]tris[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

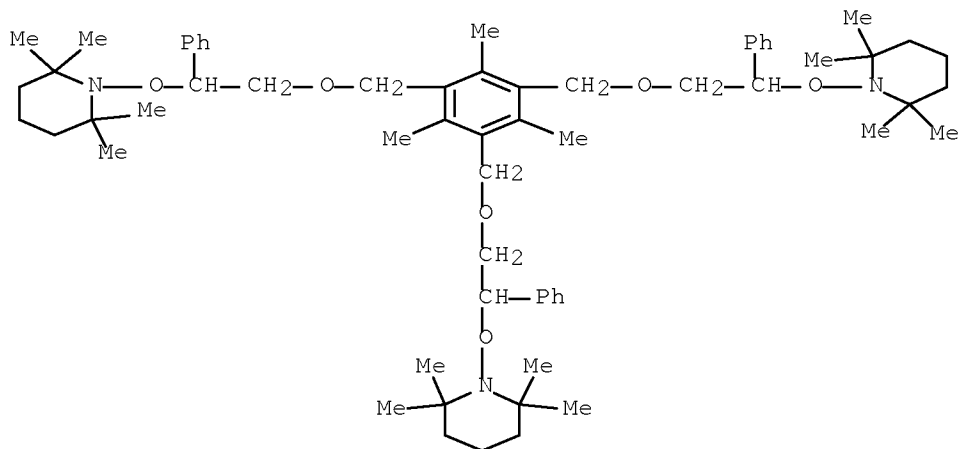


RN 372522-46-8 HCAPLUS

CN Piperidine, 1,1',1''-[(2,4,6-trimethyl-1,3,5-benzenetriyl)tris[methyleneoxy(1-phenyl-2,1-

10/519,030

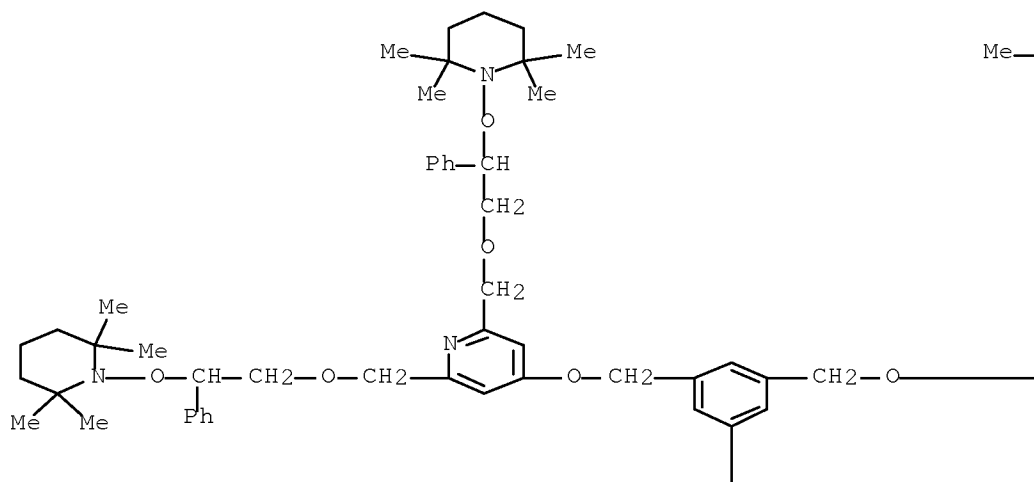
ethanediyl)oxy]]tris[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)

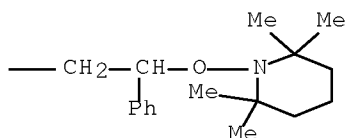
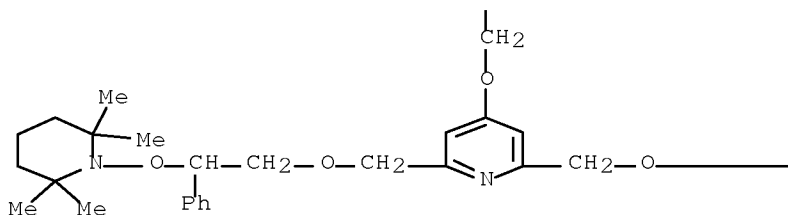
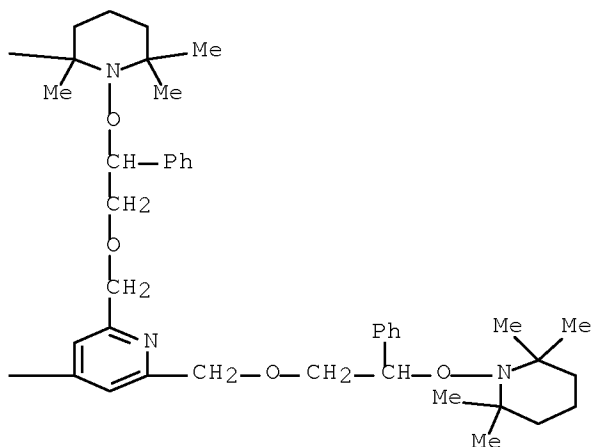


RN 372522-47-9 HCAPLUS

CN Pyridine, 4,4',4''-[1,3,5-benzenetriyltris(methyleneoxy)]tris[2,6-bis[[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethoxy)methyl]-(9CI) (CA INDEX NAME)

PAGE 1-A





- CC 35-3 (Chemistry of Synthetic High Polymers)
- ST polystyrene multiarm living controlled radical polymn; TEMPO based catalyst multiarm polystyrene; star branched polystyrene TEMPO deriv catalyst
- IT Polymerization catalysts  
(synthesis of three- and six-arm polystyrene via living/controlled free radical polymerization)
- IT 18226-42-1, 1,3,5-Tris(bromomethyl)benzene 161776-41-6  
(in catalyst preparation; synthesis of three- and six-arm



polystyrene via living/controlled free radical polymerization)

IT 372522-45-7P 372522-46-8P 372522-47-9P

(synthesis of three- and six-arm polystyrene via living/controlled free radical polymerization)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 22 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:208762 HCAPLUS Full-text

DOCUMENT NUMBER: 135:5896

TITLE: Synthesis of poly(methylene-b-styrene) by sequential living polymerization

AUTHOR(S): Zhou, Xian-Zhi; Shea, Kenneth J.

CORPORATE SOURCE: Department of Chemistry, University of California Irvine, Irvine, CA, 92697-2025, USA

SOURCE: Macromolecules (2001), 34(9), 3111-3114  
CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 23 Mar 2001

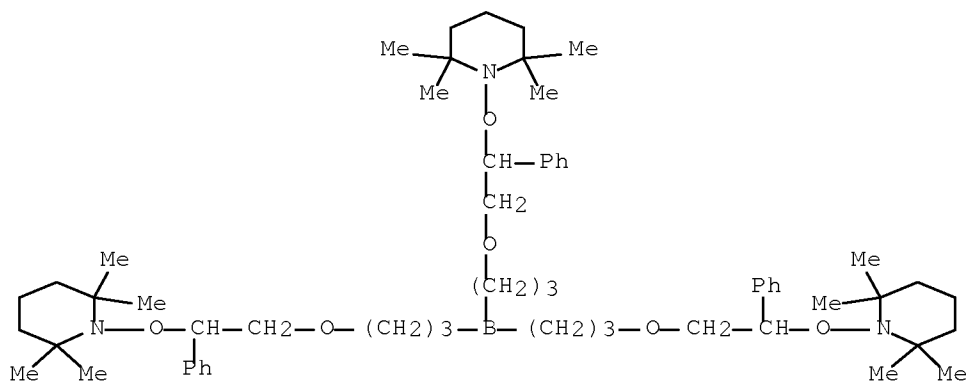
AB Poly homologation reaction for the synthesis of poly(methylene-b- styrene) block copolymers was considered. A series of block copolymers were prepared by the hydroboration-poly homologation. Control over the chain length of the polymethylene block was achieved by adjusting the initial molar ratio of ylide to organoborane.

IT 341968-37-4P

(borane; synthesis of poly(methylene-b-styrene) by sequential living polymerization)

RN 341968-37-4 HCAPLUS

CN Piperidine, 1,1',1''-[borylidynetris[3,1-propanediylxy(1-phenyl-2,1-ethanediyl)oxy]]tris[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



CC 35-4 (Chemistry of Synthetic High Polymers)

IT 341968-37-4P

(borane; synthesis of poly(methylene-b-styrene) by sequential living polymerization)

IT 161776-41-6P

(initiator; synthesis of poly(methylene-b-styrene) by sequential living polymerization)

10/519,030

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L69 ANSWER 23 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
ACCESSION NUMBER: 2001:31452 HCAPLUS Full-text  
DOCUMENT NUMBER: 134:101275  
TITLE: Preparation of mono and multifunctional  
alkoxyamines for forming nitroxyl radical  
initiators and regulators useful in the  
preparation of polymers with narrow polydispersity  
INVENTOR(S): Kramer, Andreas; Nesvadba, Peter; Zink,  
Marie-Odile; Wunderlich, Wiebke  
PATENT ASSIGNEE(S): Ciba Specialty Chemicals Holding Inc., Switz.  
SOURCE: PCT Int. Appl., 74 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.             | KIND                                                           | DATE     | APPLICATION NO. | DATE       |
|------------------------|----------------------------------------------------------------|----------|-----------------|------------|
| -----                  | ----                                                           | -----    | -----           | -----      |
| WO 2001002345          | A2                                                             | 20010111 | WO 2000-EP5899  | 20000626   |
| WO 2001002345          | A3                                                             | 20010719 |                 |            |
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|                        | CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM,    |          |                 |            |
|                        | HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,    |          |                 |            |
|                        | LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL,    |          |                 |            |
|                        | PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA,    |          |                 |            |
|                        | UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                 |            |
| RW:                    | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,    |          |                 |            |
|                        | CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,    |          |                 |            |
|                        | BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG     |          |                 |            |
| CA 2375806             | A1                                                             | 20010111 | CA 2000-2375806 | 20000626   |
| EP 1189875             | A2                                                             | 20020327 | EP 2000-951302  | 20000626   |
| EP 1189875             | B1                                                             | 20040804 |                 |            |
| R:                     | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, PT,    |          |                 |            |
|                        | IE, SI, LT, LV, FI, RO                                         |          |                 |            |
| JP 2003503474          | T                                                              | 20030128 | JP 2001-507787  | 20000626   |
| AT 272610              | T                                                              | 20040815 | AT 2000-951302  | 20000626   |
| US 6875831             | B1                                                             | 20050405 | US 2001-19618   | 20011220   |
| PRIORITY APPLN. INFO.: |                                                                |          | EP 1999-810567  | A 19990702 |
|                        |                                                                |          | WO 2000-EP5899  | W 20000626 |

OTHER SOURCE(S): MARPAT 134:101275  
ED Entered STN: 12 Jan 2001  
AB The title alkoxyamines especially useful for the living polymerization of  
unsatd. monomers or/and oligomers giving polymers with good conversion are  
compds. bearing groups which can liberate stable free nitroxyl radicals of  
specific structures.  
IT 319457-98-2P 319457-99-3P 319458-00-9P  
319458-01-0P 319458-02-1P 319458-05-4P  
319458-06-5P 319458-07-6P 319458-09-8P  
319458-10-1P 319458-13-4P 319458-14-5P  
319458-18-9P 319458-19-0P 319458-20-3P  
319458-21-4P 319458-22-5P 319458-23-6P  
319458-24-7P 319458-27-0P 319458-29-2P  
319458-32-7P 319458-34-9P 319458-37-2P

10/519,030

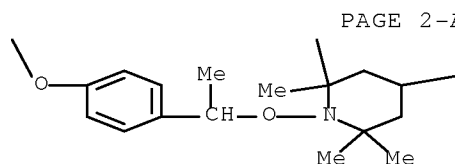
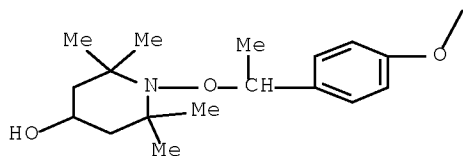
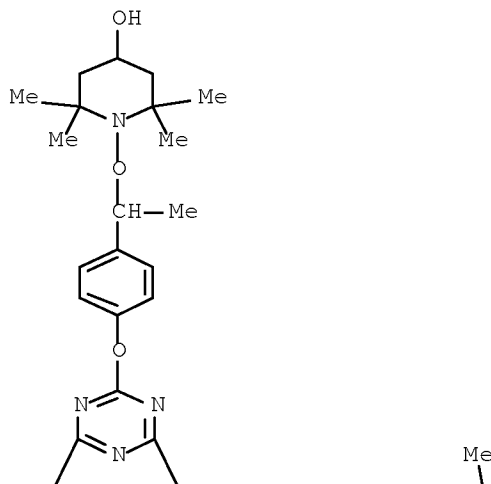
319458-40-7P 319458-43-0P 319458-46-3P  
319458-49-6P 319458-51-0P 319458-54-3P

(initiator; preparation of mono and multifunctional  
alkoxyamines as initiators for free radical polymerization with  
narrow polydispersity)

RN 319457-98-2 HCAPLUS

CN 4-Piperidinol, 1,1',1''-[1,3,5-triazine-2,4,6-triyltris(oxy-4,1-  
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NAME)

PAGE 1-A



PAGE 2-A

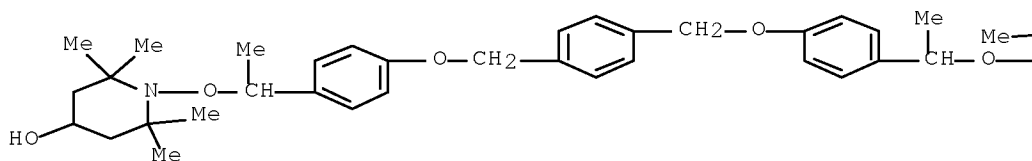
PAGE 2-B

—OH

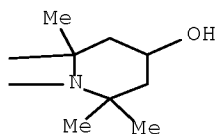
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CN 4-Piperidinol, 1,1'-[1,4-phenylenebis(methyleneoxy-4,1-  
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NAME)

PAGE 1-A

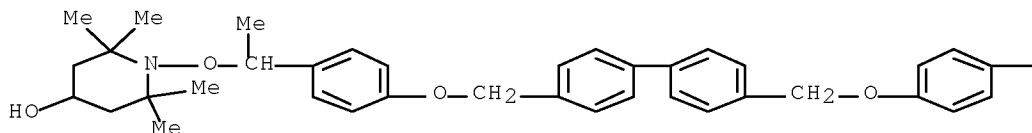


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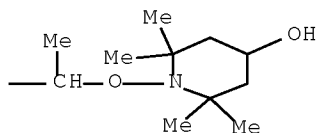


RN 319458-00-9 HCAPLUS  
 CN 4-Piperidinol, 1,1'-[[1,1'-biphenyl]-4,4'-diylbis(methyleneoxy-4,1-phenyleneethylideneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)]

PAGE 1-A

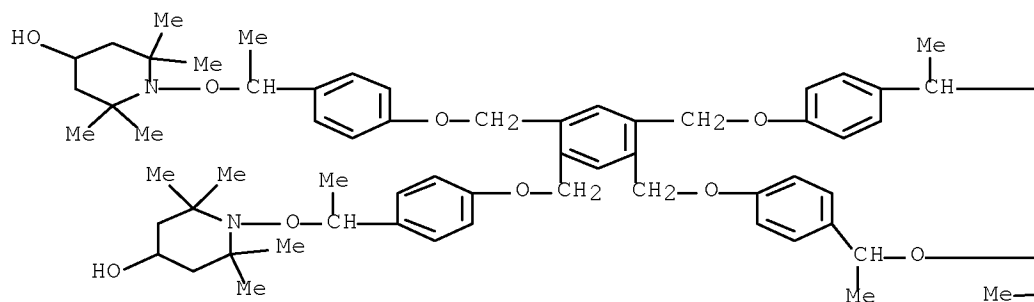


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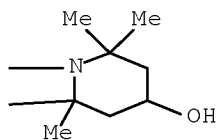
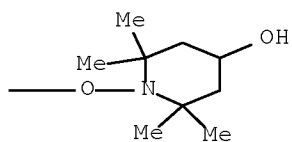


RN 319458-01-0 HCAPLUS  
 CN 4-Piperidinol, 1,1',1'',1'''-[1,2,4,5-benzenetetrayltetrakis(methyleneoxy-4,1-phenyleneethylideneoxy)]tetrakis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)]

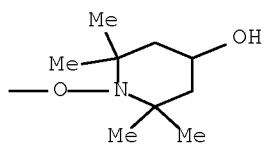
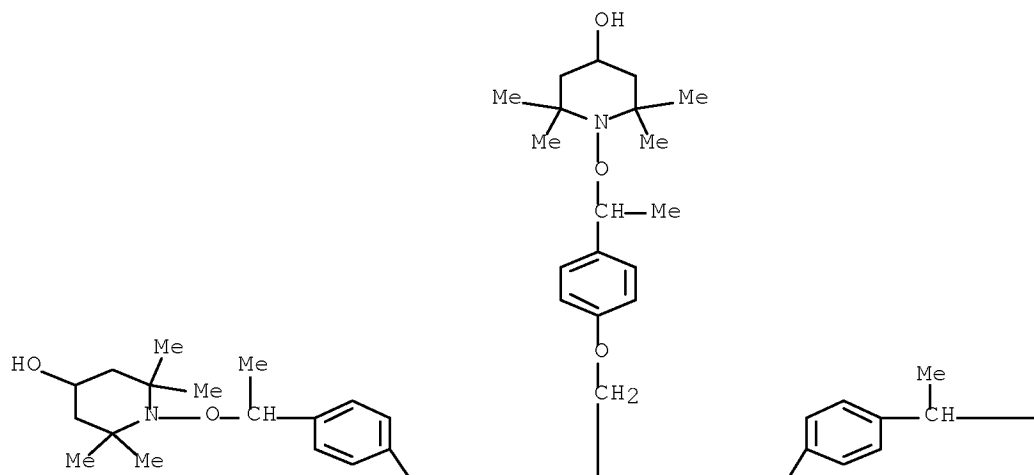
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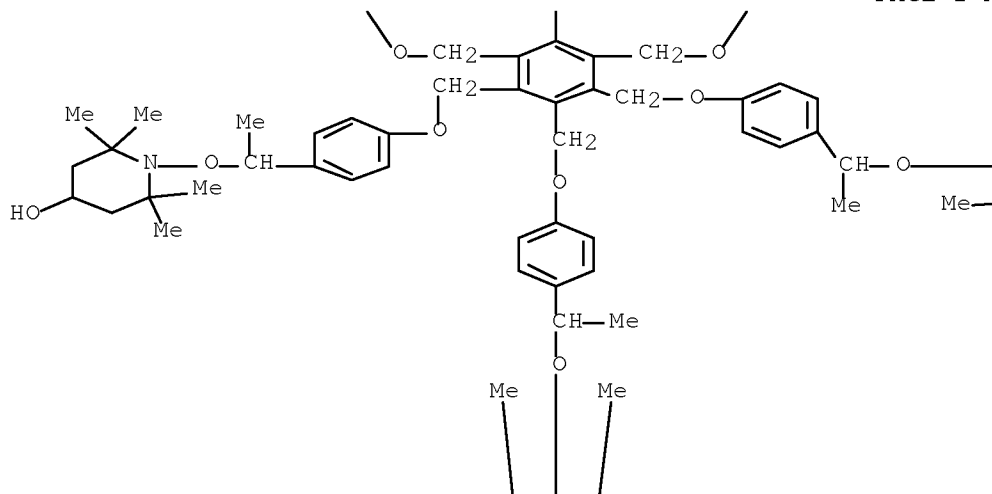


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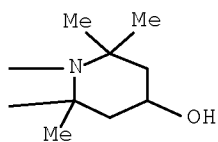


RN 319458-02-1 HCAPLUS  
 CN 4-Piperidinol, 1,1',1'',1''',1'''',1'''''-[1,2,3,4,5,6-benzenehexaylhexakis(methyleneoxy-4,1-phenyleneethyldeneoxy)]hexakis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)]

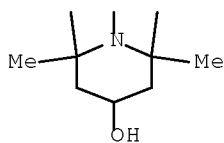




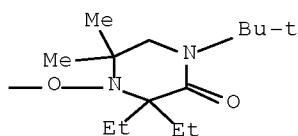
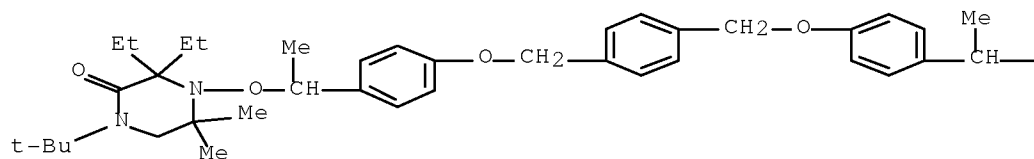
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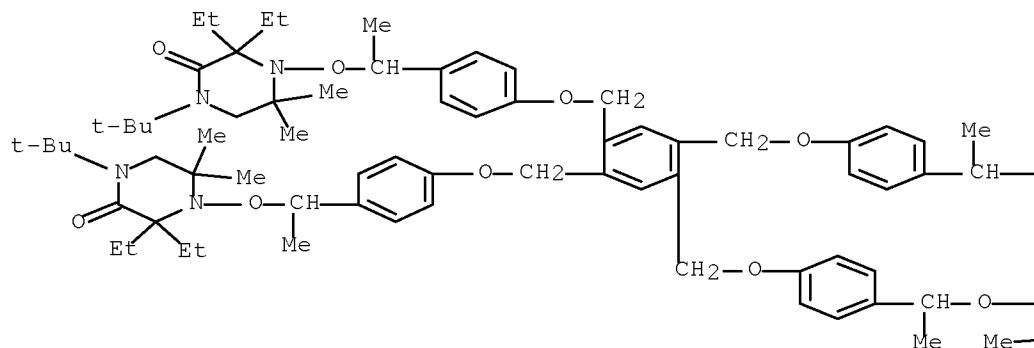
PAGE 3-A



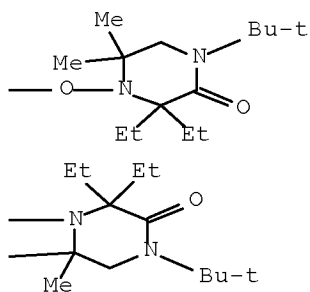
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|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| RN | 319458-05-4                                                                                                                                             | HCAPLUS |
| CN | Piperazinone, 4,4'-[1,4-phenylenebis(methyleneoxy-4,1-phenyleneethylideneoxy)]bis[1-(1,1-dimethylethyl)-3,3-diethyl-5,5-dimethyl- (9CI) (CA INDEX NAME) |         |



RN 319458-06-5 HCAPLUS  
 CN Piperazinone, 4,4',4'',4'''-[1,2,4,5-benzenetetrayltetrakis(methyleneoxy-4,1-phenyleneethylideneoxy)]tetrakis[1-(1,1-dimethylethyl)-3,3-diethyl-5,5-dimethyl- (9CI) (CA INDEX NAME)

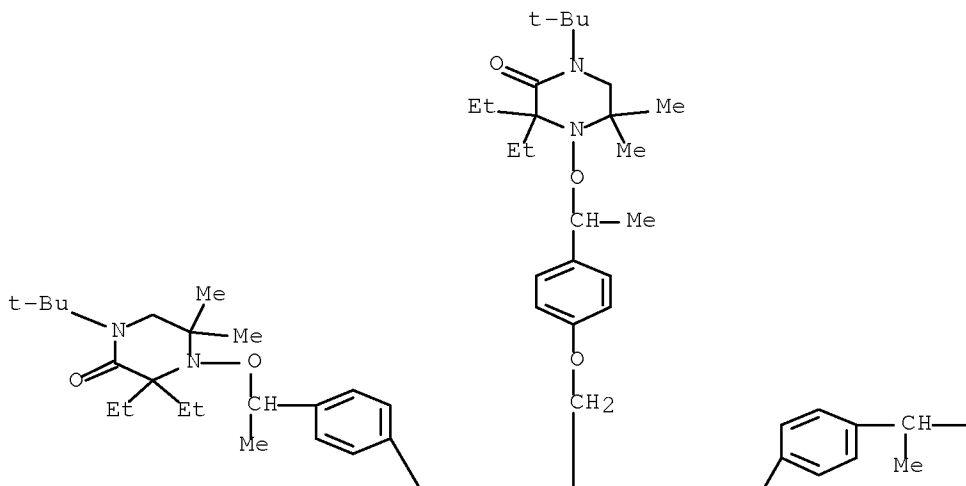


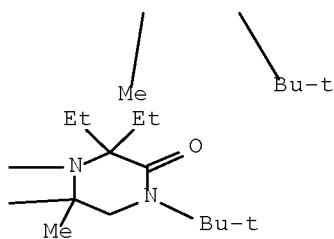
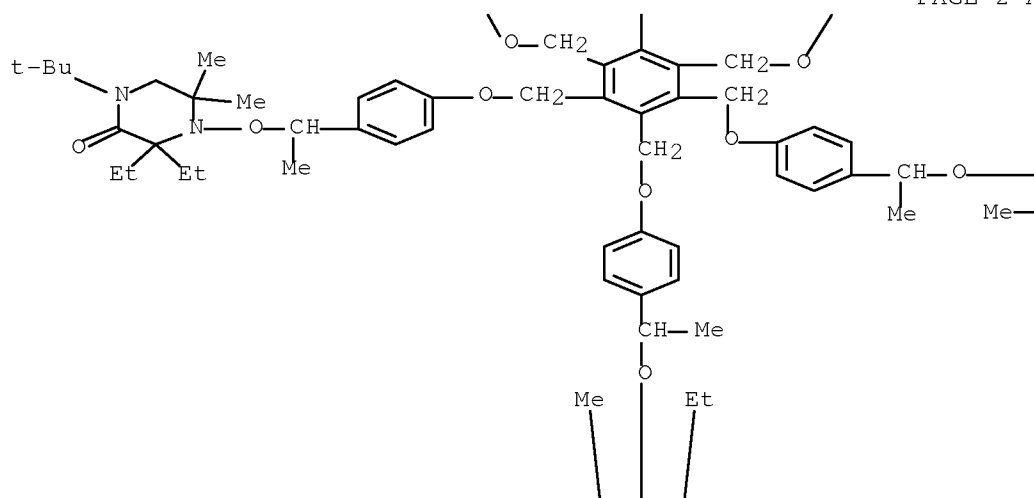
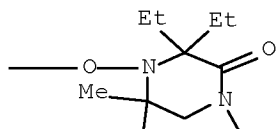




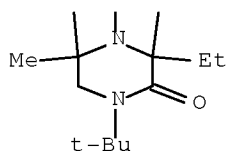
RN 319458-07-6 HCAPLUS

CN Piperazinone, 4,4',4'',4''',4''''',4''''''-[1,2,3,4,5,6-benzenehexaylhexas(methyleneoxy-4,1-phenyleneethylideneoxy)]hexakis[1-(1,1-dimethylethyl)-3,3-diethyl-5,5-dimethyl- (9CI) (CA INDEX NAME)





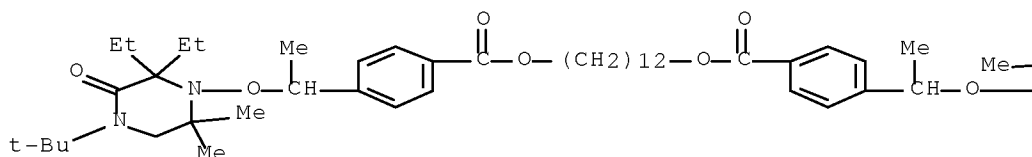
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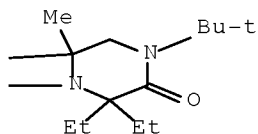
RN 319458-09-8 HCAPLUS

CN Benzoic acid, 4-[1-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]ethyl]-, 1,12-dodecanediyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

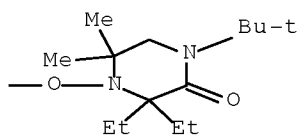
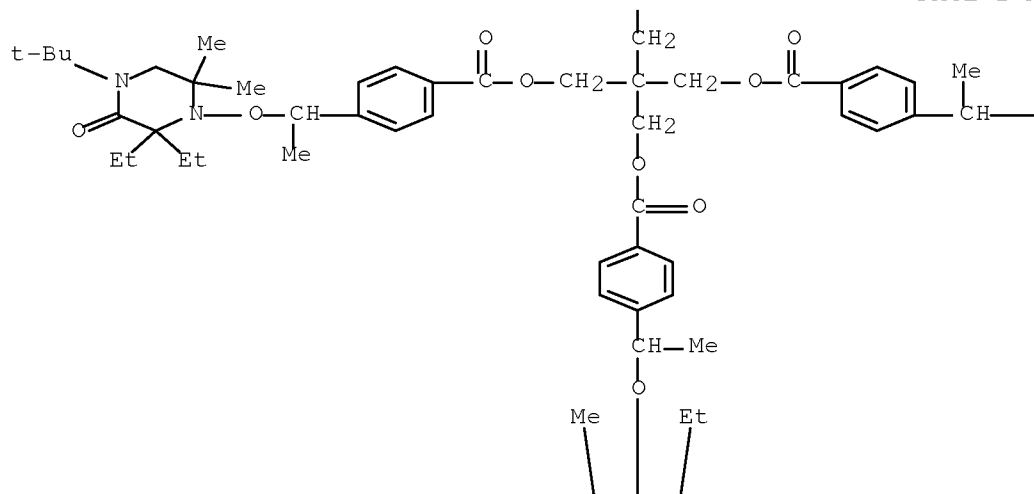
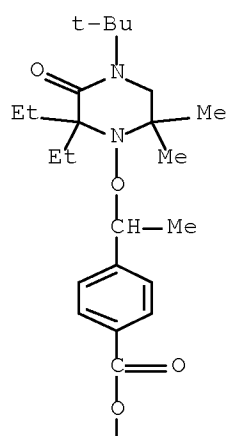


PAGE 1-B

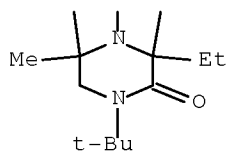


RN 319458-10-1 HCAPLUS

CN Benzoic acid, 4-[1-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]ethyl]-, 2,2-bis[[[4-[1-[[4-(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]ethyl]benzoyl]oxy]methyl]-1,3-propanediyl ester (9CI) (CA INDEX NAME)



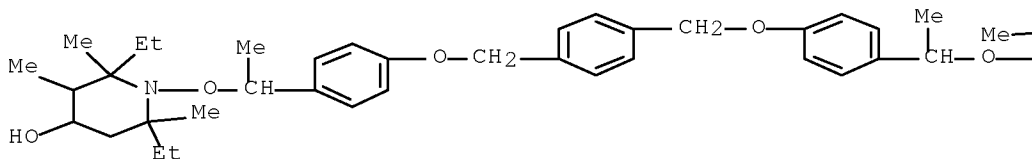
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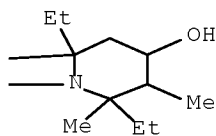
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CN 4-Piperidinol, 1,1'-[1,4-phenylenebis(methyleneoxy-4,1-phenyleneethylideneoxy)]bis[2,6-diethyl-2,3,6-trimethyl- (9CI) (CA INDEX NAME)

PAGE 1-A



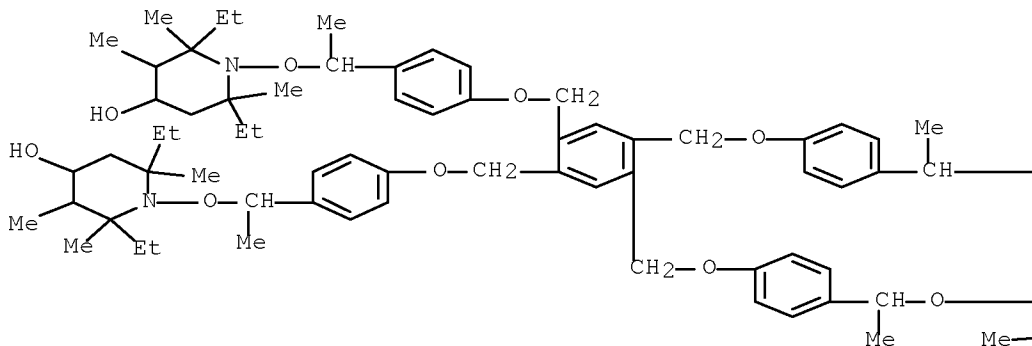
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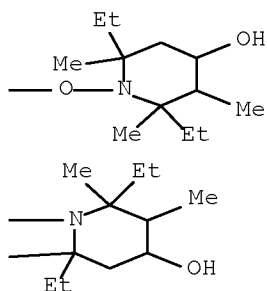
RN 319458-14-5 HCAPLUS

CN 4-Piperidinol, 1,1',1'',1'''-[1,2,4,5-benzenetetrayltetrakis(methyleneoxy-4,1-phenyleneethylideneoxy)]tetrakis[2,6-diethyl-2,3,6-trimethyl- (9CI) (CA INDEX NAME)

PAGE 1-A



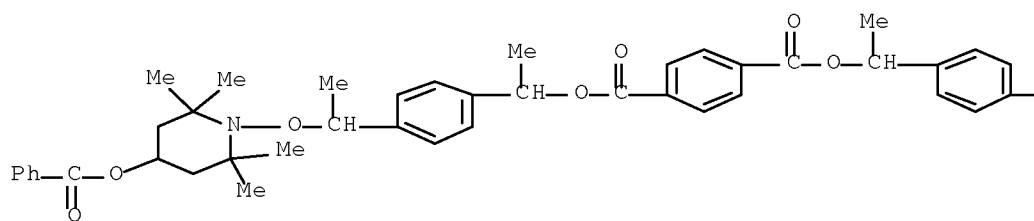
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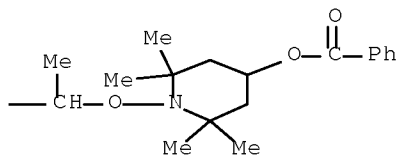
RN 319458-18-9 HCAPLUS

CN 1,4-Benzenedicarboxylic acid, bis[1-[4-[1-[[4-(benzoyloxy)-2,2,6,6-tetramethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



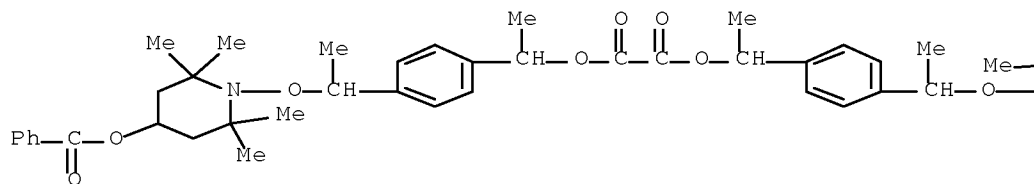
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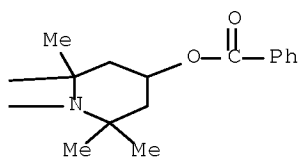
RN 319458-19-0 HCAPLUS

CN Ethanedioic acid, bis[1-[4-[1-[[4-(benzoyloxy)-2,2,6,6-tetramethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



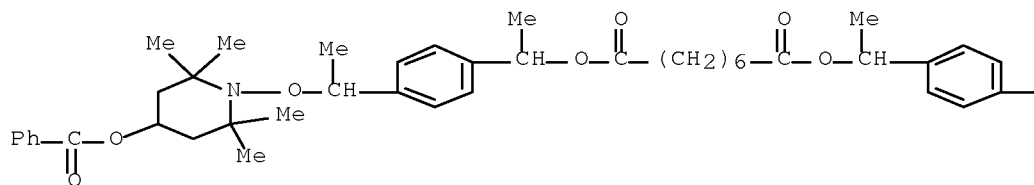
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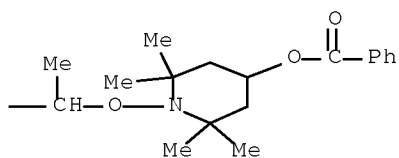
RN 319458-20-3 HCAPLUS

CN Octanedioic acid, bis[1-[4-[1-[[4-(benzoyloxy)-2,2,6,6-tetramethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



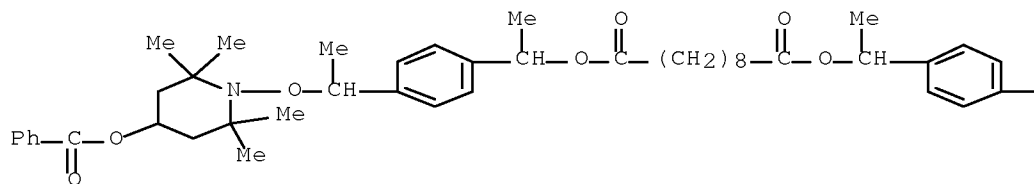
PAGE 1-B



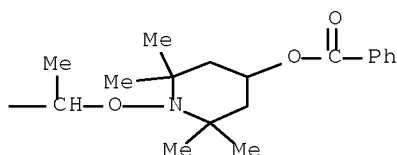
RN 319458-21-4 HCAPLUS

CN Decanedioic acid, bis[1-[4-[1-[[4-(benzoyloxy)-2,2,6,6-tetramethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



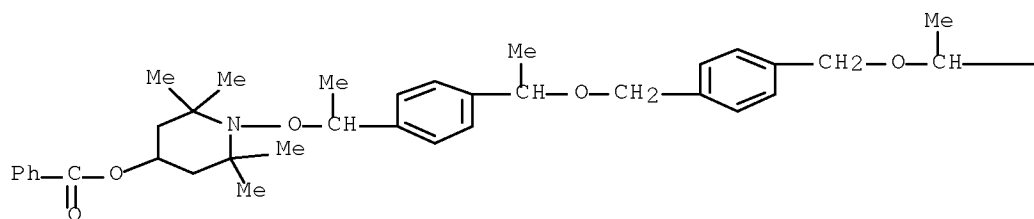
PAGE 1-B



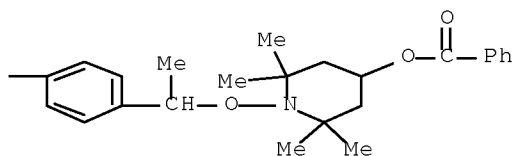
RN 319458-22-5 HCAPLUS

CN 4-Piperidinol, 1,1'-[1,4-phenylenebis(methyleneoxyethylidene-4,1-phenyleneethylideneoxy)]bis[2,2,6,6-tetramethyl-, dibenzoate (ester) (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B

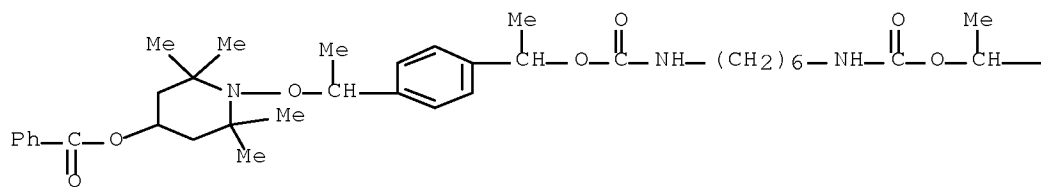


RN 319458-23-6 HCAPLUS

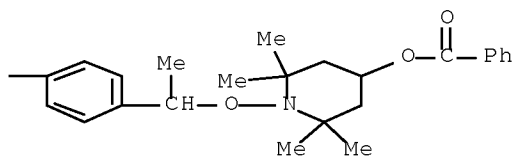
CN Carbamic acid, 1,6-hexanediylbis-, bis[1-[4-[1-[[4-(benzoyloxy)-2,2,6,6-tetramethyl-1-piperidinyloxy]ethyl]phenyl]ethyl] ester (9CI)  
(CA INDEX NAME)



PAGE 1-A

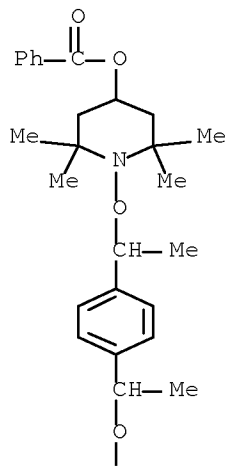


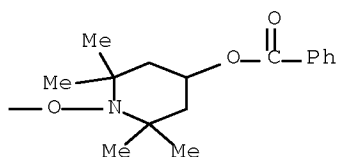
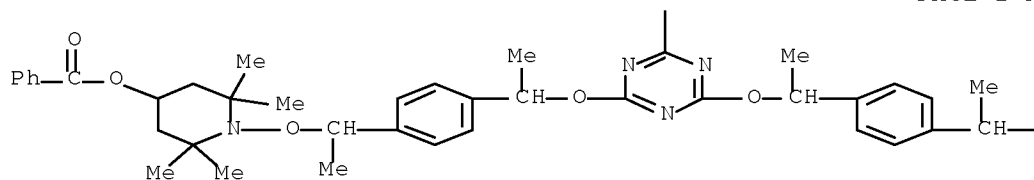
PAGE 1-B



RN 319458-24-7 HCAPLUS  
 CN 4-Piperidinol, 1,1',1''-[1,3,5-triazine-2,4,6-triyltris(oxyethylidene-4,1-phenyleneethylideneoxy)]tris[2,2,6,6-tetramethyl-, tribenzoate (ester) (9CI) (CA INDEX NAME)

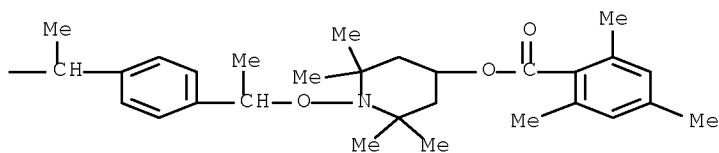
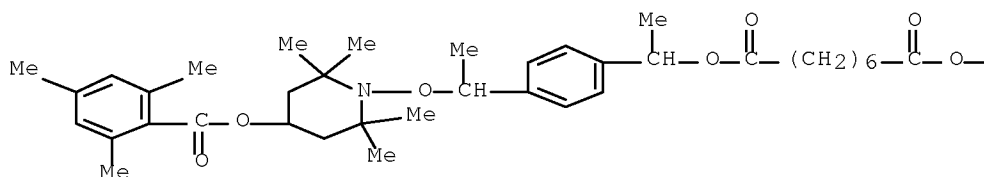
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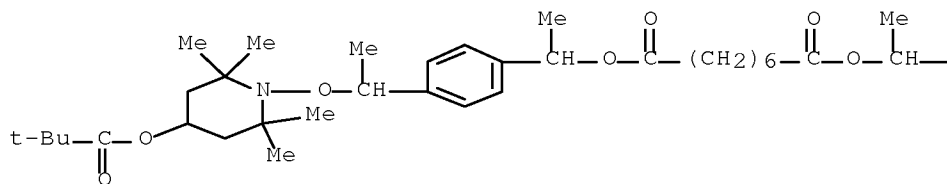
CN Octanedioic acid, bis[1-[4-[1-[[2,2,6,6-tetramethyl-4-[(2,4,6-trimethylbenzoyl)oxy]-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)



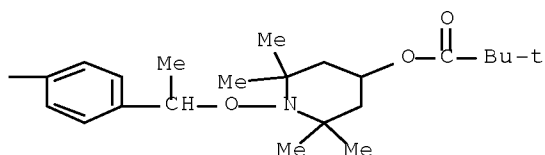
RN 319458-29-2 HCAPLUS

CN Octanedioic acid, bis[1-[4-[1-[[4-(2,2-dimethyl-1-oxopropoxy)-2,2,6,6-tetramethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A

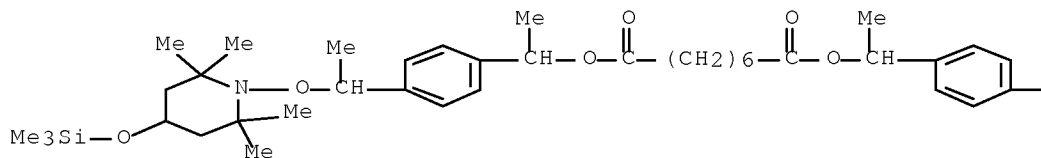


PAGE 1-B

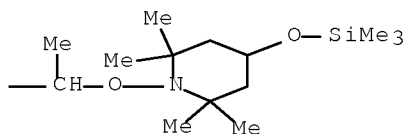


RN 319458-32-7 HCAPLUS  
 CN Octanedioic acid, bis[1-[4-[1-[[2,2,6,6-tetramethyl-4-  
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 (9CI) (CA INDEX NAME)

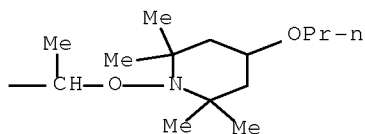
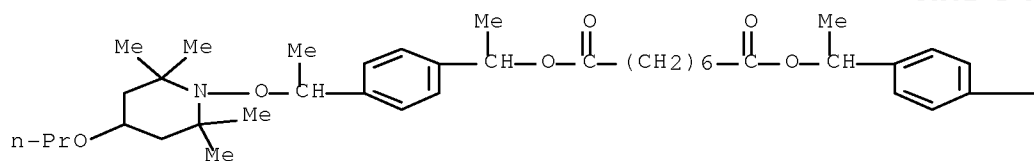
PAGE 1-A



PAGE 1-B

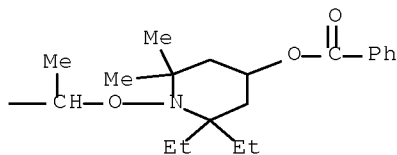
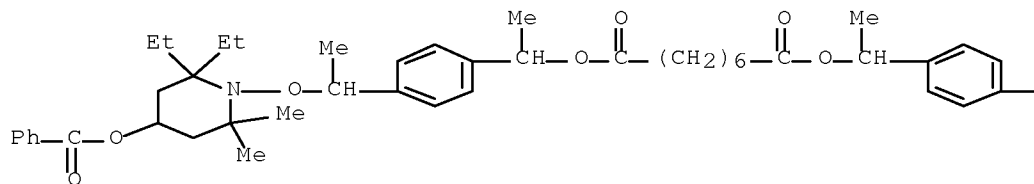


RN 319458-34-9 HCAPLUS  
 CN Octanedioic acid, bis[1-[4-[1-[(2,2,6,6-tetramethyl-4-propoxy-1-  
 piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)



RN 319458-37-2 HCAPLUS

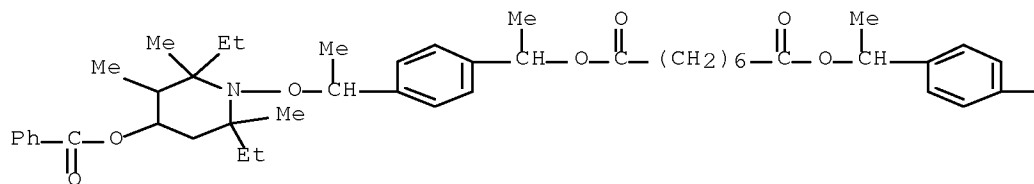
CN Octanedioic acid, bis[1-[4-[1-[[4-(benzoyloxy)-2,2-diethyl-6,6-dimethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)



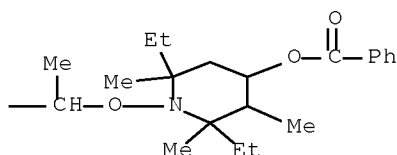
RN 319458-40-7 HCAPLUS

CN Octanedioic acid, bis[1-[4-[1-[[4-(benzoyloxy)-2,6-diethyl-2,3,6-trimethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



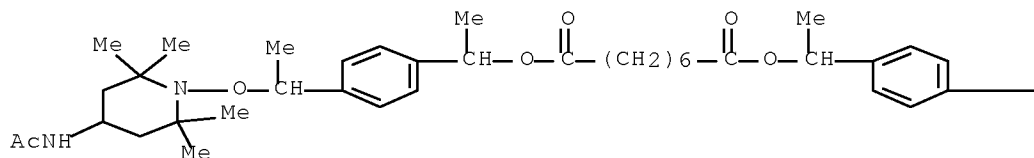
PAGE 1-B



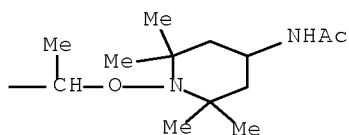
RN 319458-43-0 HCAPLUS

CN Octanedioic acid, bis[1-[4-[1-[[4-(acetylamino)-2,2,6,6-tetramethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A

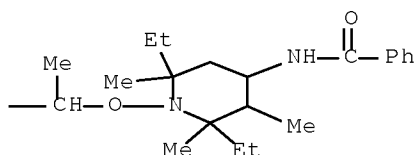
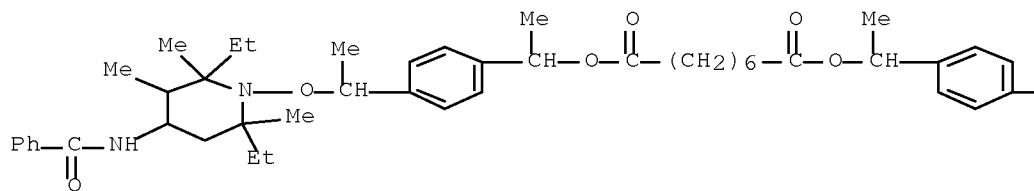


PAGE 1-B



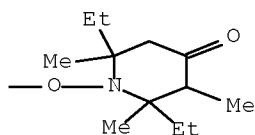
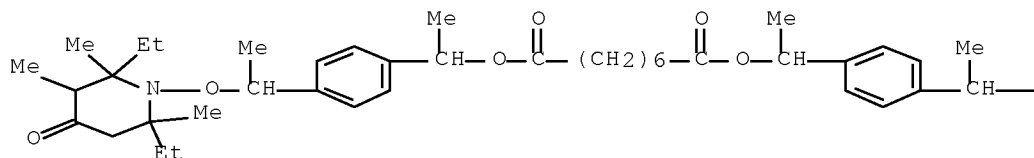
RN 319458-46-3 HCAPLUS

CN Octanedioic acid, bis[1-[4-[1-[[4-(benzoylamino)-2,6-diethyl-2,3,6-trimethyl-1-piperidinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)



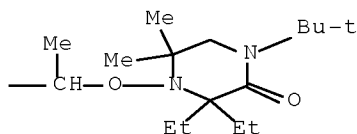
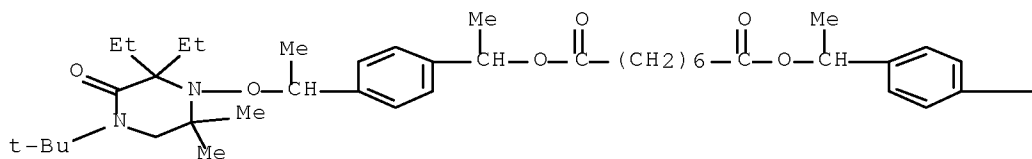
RN 319458-49-6 HCAPLUS

CN Octanedioic acid, bis[1-[4-[1-[(2,6-diethyl-2,3,6-trimethyl-4-oxo-1-piperidinyl)oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)



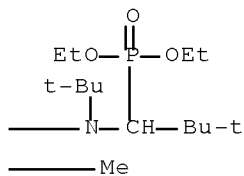
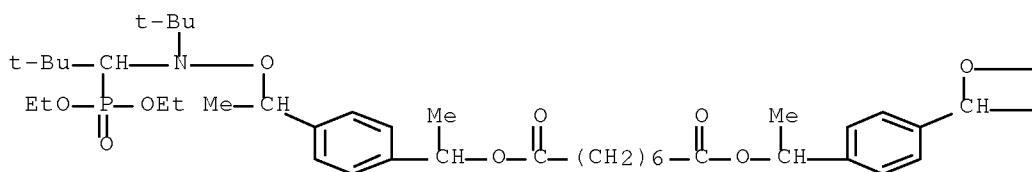
RN 319458-51-0 HCAPLUS

CN Octanedioic acid, bis[1-[4-[1-[(1,1-dimethylethyl)-2,2-diethyl-6,6-dimethyl-3-oxo-1-piperazinyl]oxy]ethyl]phenyl]ethyl] ester (9CI) (CA INDEX NAME)



RN 319458-54-3 HCAPLUS

CN Octanedioic acid, bis[1-[4-[3,4-bis(1,1-dimethylethyl)-5-ethoxy-1-methyl-5-oxido-2,6-dioxo-3-aza-5-phosphaoct-1-yl]phenyl]ethyl] ester  
(9CI) (CA INDEX NAME)



IC ICM C07C239-20

ICS C07D211-94; C08F004-00

CC 35-3 (Chemistry of Synthetic High Polymers)

ST alkoxyamine multifunctional nitroxyl initiator radical  
living polymn; narrow polydispersity radical living polymn; mol wt  
distribution living polymn nitroxyl radical initiator

- IT Amines, preparation  
(alkoxylated, derivs., initiator; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)
- IT Polymerization  
(living, radical; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)
- IT Polymerization catalysts  
(living; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)
- IT Nitroxides  
(preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)
- IT Polymerization catalysts  
(radical; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)
- IT 243972-13-6P 243972-14-7P 243972-16-9P 264280-52-6P  
319457-95-9P 319457-96-0P 319457-97-1P 319458-04-3P  
319458-08-7P 319458-11-2P 319458-12-3P 319458-15-6P  
319458-16-7P 319458-17-8P 319458-25-8P 319458-26-9P  
319458-28-1P 319458-30-5P 319458-31-6P 319458-33-8P  
319458-35-0P 319458-36-1P 319458-38-3P 319458-39-4P  
319458-41-8P 319458-42-9P 319458-44-1P 319458-45-2P  
319458-47-4P 319458-48-5P 319458-50-9P 319458-52-1P  
319458-53-2P  
(initiator/intermediate for multifunctional initiator; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)
- IT 264280-51-5P 319457-98-2P 319457-99-3P  
319458-00-9P 319458-01-0P 319458-02-1P  
319458-03-2P 319458-05-4P 319458-06-5P  
319458-07-6P 319458-09-8P 319458-10-1P  
319458-13-4P 319458-14-5P 319458-18-9P  
319458-19-0P 319458-20-3P 319458-21-4P  
319458-22-5P 319458-23-6P 319458-24-7P  
319458-27-0P 319458-29-2P 319458-32-7P  
319458-34-9P 319458-37-2P 319458-40-7P  
319458-43-0P 319458-46-3P 319458-49-6P  
319458-51-0P 319458-54-3P  
(initiator; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)
- IT 9003-49-0P, Butyl acrylate homopolymer 9003-53-6P, Polystyrene  
(linear or star-shaped; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)
- IT 106-95-6, Allyl bromide, reactions 108-77-0, Cyanuric chloride  
115-77-5, Pentaerythritol, reactions 535-11-5, Ethyl  
2-bromopropionate 623-24-5,  $\alpha, \alpha'$ -Dibromo-p-xylene  
814-68-6, Acryloyl chloride 937-30-4 2226-96-2,  
4-Hydroxy-2,2,6,6-tetramethylpiperidin-1-oxyl 3095-73-6,  
Hexakis(bromomethyl)benzene 3245-23-6, 4-Ethylphenyl acetate  
5675-51-4, 1,12-Dodecanediol 15442-91-8, 1,2,4,5-  
Tetrakis(bromomethyl)benzene 20248-86-6, 4,4'-  
Bis(bromomethyl)biphenyl 61745-37-7 264279-93-8



10/519,030

(reactant for initiator; preparation of mono and multifunctional alkoxyamines as initiators for free radical polymerization with narrow polydispersity)

L69 ANSWER 24 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:279746 HCAPLUS Full-text

DOCUMENT NUMBER: 130:325501

TITLE: Procedure for manufacture of block copolymers with controlled architecture via functional radical initiators and living radical polymerization, and initiator compositions, and corresponding copolymers

INVENTOR(S): Bertin, Denis; Destarac, Mathias; Boutevin, Bernard

PATENT ASSIGNEE(S): Elf Atochem S.A., Fr.

SOURCE: Eur. Pat. Appl., 34 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.                                                                                | KIND | DATE     | APPLICATION NO. | DATE        |
|-------------------------------------------------------------------------------------------|------|----------|-----------------|-------------|
| EP 911350                                                                                 | A1   | 19990428 | EP 1998-402624  | 19981022    |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO |      |          |                 |             |
| FR 2770219                                                                                | A1   | 19990430 | FR 1997-13383   | 19971024    |
| EP 1277771                                                                                | A2   | 20030122 | EP 2002-78512   | 19981022    |
| R: AT, BE, DE, ES, FR, GB, IT, NL, SE, FI                                                 |      |          |                 |             |
| EP 1288236                                                                                | A2   | 20030305 | EP 2002-78511   | 19981022    |
| R: AT, BE, DE, ES, FR, GB, IT, NL, SE, FI                                                 |      |          |                 |             |
| PRIORITY APPLN. INFO.:                                                                    |      |          | FR 1997-13383   | A 19971024  |
|                                                                                           |      |          | EP 1998-402624  | A3 19981022 |

OTHER SOURCE(S): MARPAT 130:325501

ED Entered STN: 06 May 1999

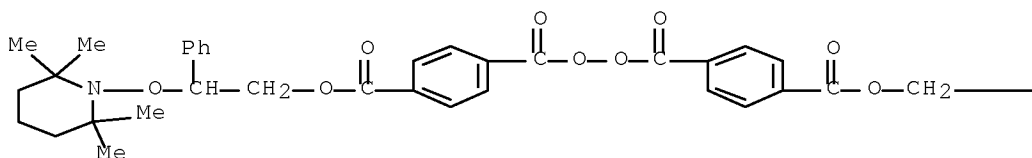
AB The first step in the procedure is thermally induced radical polymerization of at least one monomer M1 = methacrylic monomer and an initiator X-A-Y, where X and Y = monovalent living radical groups and A = divalent linking group capable of radical polymerization and radical-reactive groups, e.g., diazo - N=N-, peroxide -O-O-, to obtain a living polymer X-D (or Y-E)PM1-T where D = is a free radical moiety and T = terminal group. The initiator is obtained by reaction of 4,4'-Azobis[4-cyanovaleric acid] and end-functionalized alcs. or by reaction of H2O2 and an acid chloride containing groups X or Y. In the second step, living radical polymerization of the polymer and at least one other monomer, M2, is carried out, either by photochem. activation or by chain transfer control, to obtain a multifunctional macroinitiator that can be used in yet another polymerization step with at least one monomer M3; M2 and M3 are selected from vinyl, allyl, vinylidene, diene, or olefinic monomers. The second step is carried out in presence of transition metal complex catalysts, preferably CuZ'/L where Z = halogen, hexafluorophosphate, acetate and L =  $\alpha$ -diimine ligand. Thus, a triblock copolymer, PS-PABu-PS was obtained; the initiator was prepared from 4,4'-Azobis[4-cyanovaleric acid] and trichloroethanol and used in radical polymerization of Bu acrylate at 130° to obtain the living poly(Bu acrylate) of average mol. weight 8700 g/mol and degree of polymerization of 64. The living polymer was then mixed with styrene and CuCl and bipyridine as radical polymerization catalyst system; the triblock copolymer was isolated from the reaction medium and has average mol.

10/519,030

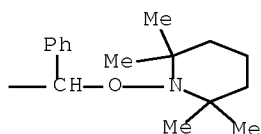
weight of 92,600 g/mol, of which 8700 g/mol correspond to the poly(Bu acrylate) sequence and 45,000 to the polystyrene sequences.

IT 223668-08-4P  
(peroxide initiator; functional radical  
initiators in sequential radical and living radical polymerization  
for manufacture of block copolymers with controlled architecture)  
RN 223668-08-4 HCAPLUS  
CN Benzoic acid, 4,4'-(dioxycarbonyl)bis-, bis[2-phenyl-2-[(2,2,6,6-  
tetramethyl-1-piperidinyl)oxy]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC ICM C08F293-00  
ICS C07C255-65  
CC 35-4 (Chemistry of Synthetic High Polymers)  
IT Polymerization  
Polymerization  
(block, photochem.; functional radical initiators in  
sequential radical and living radical polymerization for manufacture of  
block  
copolymers with controlled architecture)  
IT Polymerization  
Polymerization catalysts  
(living; functional radical initiators in sequential  
radical and living radical polymerization for manufacture of block  
copolymers  
with controlled architecture)  
IT Polymerization catalysts  
(photopolymer., block; functional radical initiators in  
sequential radical and living radical polymerization for manufacture of  
block  
copolymers with controlled architecture)  
IT Polymerization  
Polymerization catalysts  
(radical; functional radical initiators in sequential  
radical and living radical polymerization for manufacture of block  
copolymers  
with controlled architecture)  
IT 213546-64-6P 223668-06-2P

- (azobis initiator; functional radical initiators in sequential radical and living radical polymerization for manufacture of block copolymers with controlled architecture)
- IT 106399-43-3P, Butadiene-methyl methacrylate block copolymer 725713-28-0P  
(diblock; functional radical initiators in sequential radical and living radical polymerization for manufacture of block copolymers with controlled architecture)
- IT 100-20-9, 1,4-Benzenedicarbonyl dichloride 115-20-8, Trichloroethanol 2638-94-0, 4,4'-Azobis[4-cyanovaleric acid] 7722-84-1, Hydrogen peroxide (H2O2), reactions 30887-99-1 161776-41-6, 2-Phenyl-2-[(2,2,6,6-tetramethylpiperidino)oxy]ethanol  
(functional radical initiators in sequential radical and living radical polymerization for manufacture of block copolymers with controlled architecture)
- IT 9003-49-0P, Poly(butyl acrylate) 9011-14-7P, Poly(methyl methacrylate)  
(functional radical initiators in sequential radical and living radical polymerization for manufacture of block copolymers with controlled architecture)
- IT 223668-07-3P  
(intermediate; functional radical initiators in sequential radical and living radical polymerization for manufacture of block copolymers with controlled architecture)
- IT 223668-08-4P  
(peroxide initiator; functional radical initiators in sequential radical and living radical polymerization for manufacture of block copolymers with controlled architecture)
- IT 7758-89-6, Copper chloride (CuCl) 37275-48-2, Bipyridine  
(radical polymerization catalyst system; functional radical initiators in sequential radical and living radical polymerization for manufacture of block copolymers with controlled architecture)
- IT 110772-34-4P, Butyl acrylate-styrene block copolymer 705279-67-0P  
(triblock; functional radical initiators in sequential radical and living radical polymerization for manufacture of block copolymers with controlled architecture)
- REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 25 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:572917 HCAPLUS Full-text

DOCUMENT NUMBER: 129:276766

TITLE: Soluble supports tailored for organic synthesis: parallel polymer synthesis via sequential normal/living free radical processes

AUTHOR(S): Gravert, Dennis J.; Datta, Anita; Wentworth, Paul, Jr.; Janda, Kim D.

CORPORATE SOURCE: Department of Chemistry and The Skaggs Institute for Chemical Biology, Scripps Research Institute, La Jolla, CA, 92037, USA

SOURCE: Journal of the American Chemical Society (1998), 120(37), 9481-9495  
CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 10 Sep 1998

AB To expand the availability and solubility range of polymer supports for liquid-phase organic synthesis (LPOS) we have applied a sequence of normal and "living" free radical polymerization to generate a library of block copolymers possessing either block or graft architecture with initiators and a diverse set of vinyl monomers. The structure, mol. weight, and polydispersity (PD) of the individual library members have been determined by size exclusion chromatog. (SEC), <sup>1</sup>H and <sup>13</sup>C NMR, and as a function of the solubility of each polymer in a range of solvents. One copolymer, polyBS-DS (Mn = 17 000, PD = 1.54) derived from 4-tert-butylstyrene (BS), 3,4-dimethoxystyrene (DS) has a solubility profile [soluble in toluene, THF (THF), ether, acetone and methylene chloride (DCM), insol. in methanol and water] that is different from the present polymer of choice for LPOS, poly(ethylene) glycol (PEG), and was studied in some detail as a new support in LPOS. The α-nitrile groups of polyBS-DS are reduced smoothly with LiAlH<sub>4</sub> in THF to give the amino functionalized copolymer (0.14 mmol g<sup>-1</sup> of amino groups based on a quant. ninhydrin anal.). Kinetic studies have revealed that derivatization of the amino groups of the copolymer with 4-dimethylaminocinnamaldehyde occurs at a comparable rate to a solution counterpart (k<sub>poly22</sub> = 0.49 L mol<sup>-1</sup> h<sup>-1</sup> vs k<sub>amino</sub>hexane = 0.69 L mol<sup>-1</sup> h<sup>-1</sup>). Following reaction with N-glutaroyl-(2S,4S)-4-diphenylphosphino- 2-[(diphenylphosphino)methyl]pyrrolidine and exchange of Rh(I), the resulting phosphine containing copolymer, catalyzes the enantioselective hydrogenation of 2-N-acetamidoacrylic acid to N-acetylalanine in THF. An 87% enantiomeric excess (ee) of (S)-N-acetylalanine is obtained, comparable to that observed with a homogeneous phosphine ligand. This work highlights the power of a parallel polymer synthesis strategy, from conception to application, for the generation of polymers possessing unique solubility profiles and functionality which can serve as novel supports in LPOS.

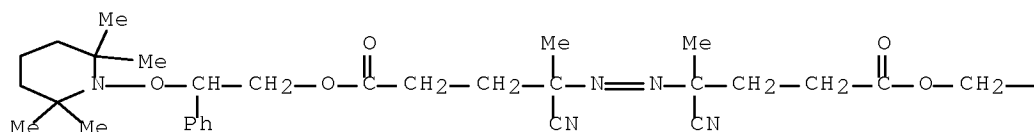
IT 188119-33-7 203382-60-9

(catalyst for; parallel polymer preparation via sequential normal/living free radical polymerization)

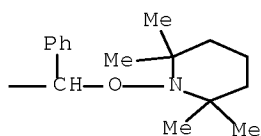
RN 188119-33-7 HCAPLUS

CN Pentanoic acid, 4,4'-azobis[4-cyano-, bis[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



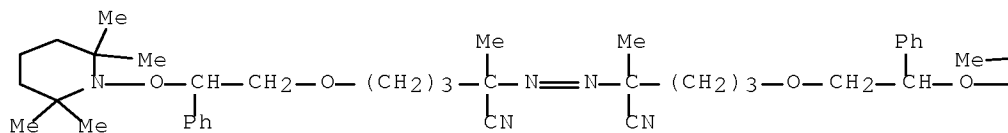
RN 203382-60-9 HCAPLUS

CN Pentanenitrile, 2,2'-azobis[2-methyl-5-[2-phenyl-2-[(2,2,6,6-

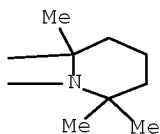
10/519,030

tetramethyl-1-piperidinyloxy]ethoxy]- (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



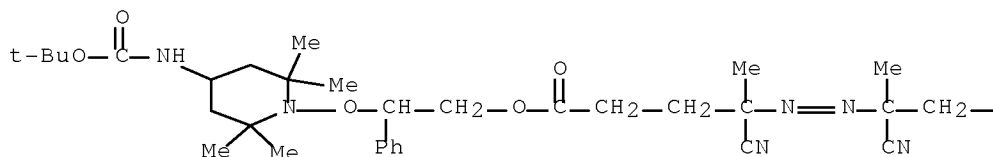
IT 213994-38-8P

(catalyst for; parallel polymer preparation via sequential normal/living free radical polymerization)

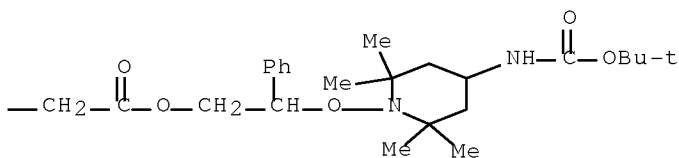
RN 213994-38-8 HCAPLUS

CN Pentanoic acid, 4,4'-azobis[4-cyano-, bis[2-[[4-[[1,1-dimethylethoxy)carbonyl]amino]-2,2,6,6-tetramethyl-1-piperidinyloxy]-2-phenylethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



CC 37-3 (Plastics Manufacture and Processing)

Section cross-reference(s): 67

ST dimethoxystyrene butylstyrene block polymer catalyst support

IT 188119-33-7 203382-60-9

(catalyst for; parallel polymer preparation via sequential normal/living free radical polymerization)

IT 213994-38-8P  
(catalyst for; parallel polymer preparation via sequential normal/living free radical polymerization)

IT 920-46-7, Methacryloyl chloride 4693-47-4 14691-88-4 24424-99-5,  
Di-tert-butyl dicarbonate 161776-41-6  
(in preparation of catalyst; parallel polymer preparation via sequential normal/living free radical polymerization)

IT 213994-43-5P 213994-47-9P 213994-50-4P  
(in preparation of catalyst; parallel polymer preparation via sequential normal/living free radical polymerization)

IT 12092-47-6,  $\mu$ -Dichloro-bis(1,5-cyclooctadiene)-dirhodium  
213994-93-5D, reaction products with reduced and hydrogenated Bu styrene-dimethoxystyrene block copolymer  
(in sequential normal/living free radical polymerization for polymer-supported catalyst)

IT 61478-29-3  
(in sequential normal/living free radical polymerization for polymer-supported catalyst)

IT 213994-64-0DP, reduced with  $\text{LiAlH}_4$ , hydrogenated, derivs.  
(sequential normal/living free radical polymerization for polymer-supported catalyst)

IT 5429-56-1  
(sequential normal/living free radical polymerization for polymer-supported catalyst for hydrogenation)

IT 97-69-8P  
(sequential normal/living free radical polymerization for polymer-supported catalyst for hydrogenation)

REFERENCE COUNT: 85 THERE ARE 85 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 26 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1997:532628 HCAPLUS Full-text

DOCUMENT NUMBER: 127:221034

TITLE: Block Copolymer Preparation Using Sequential Normal/Living Radical Polymerization Techniques

AUTHOR(S): Li, I. Q.; Howell, B. A.; Dineen, M. T.; Kastl, P. E.; Lyons, J. W.; Meunier, D. M.; Smith, P. B.; Priddy, D. B.

CORPORATE SOURCE: Center for Applications in Polymer Science, Central Michigan University, Mount Pleasant, MI, 48859, USA

SOURCE: Macromolecules (1997), 30(18), 5195-5199

CODEN: MAMOBX; ISSN: 0024-9297

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 21 Aug 1997

AB Anionic and nitroxide-mediated (NM) radical polymerization works well for styrene but not for acrylates. We have overcome this problem and successfully prepared styrene-b-Bu acrylate (S-BA), styrene-b-Me methacrylate (S-MMA), styrene-b-isoprene (S-IP), and styrene-alt-acrylonitrile-b-isoprene (SAN-IP) polymers using a sequential normal/living radical polymerization scheme. Clear (S-IP and SAN-IP) to translucent (S-BA and S-MMA) films were obtained having microphase-separated polymer morphol. GPC studies and chemical digestion of the IP segments of S-IP and SAN-IP block copolymers confirmed their block structure. The sequential normal/living radical polymerization

approach provides a new route to synthesize block polymers that have previously proven very difficult to make.

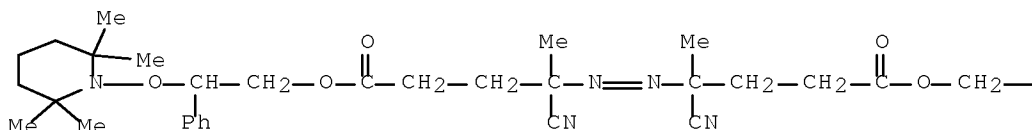
IT 188119-33-7P

(preparation of acrylic block copolymers using sequential normal/living radical polymerization initiated by AIBN and)

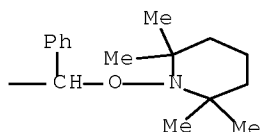
RN 188119-33-7 HCAPLUS

CN Pentanoic acid, 4,4'-azobis[4-cyano-, bis[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl] ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



CC 35-4 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36

ST normal living sequential polymn acrylate methacrylate; isoprene acrylate styrene block copolymer prepn; nitroxide functional azo initiator acrylate polymn; translucent microphase sepd block copolymer synthesis; acrylonitrile isoprene styrene alternating block copolymer; SAN isoprene block copolymer prepn; polyacrylate macroinitiator isoprene styrene polymn

IT 17170-81-9 161776-41-6

(initiator synthesis; preparation of acrylic block copolymers using sequential normal/living radical polymerization)

IT 188119-33-7P

(preparation of acrylic block copolymers using sequential normal/living radical polymerization initiated by AIBN and)

IT 78-67-1, AIBN

(preparation of acrylic block copolymers using sequential normal/living radical polymerization initiated by nitroxide functional azo initiator and)

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 27 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1997:324791 HCAPLUS Full-text

DOCUMENT NUMBER: 127:5476

TITLE: Difunctional living free radical polymerization initiators for vinyl aromatic monomers

INVENTOR(S): Koster, Robert A.; Priddy, Duane B.; Li, Irene

10/519,030

PATENT ASSIGNEE(S): Dow Chemical Co., USA  
 SOURCE: U.S., 9 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE        |
|------------------------|------|----------|-----------------|-------------|
| US 5627248             | A    | 19970506 | US 1995-533799  | 19950926    |
| US 5677388             | A    | 19971014 | US 1996-731216  | 19961008    |
| PRIORITY APPLN. INFO.: |      |          | US 1995-533799  | A3 19950926 |

OTHER SOURCE(S): MARPAT 127:5476

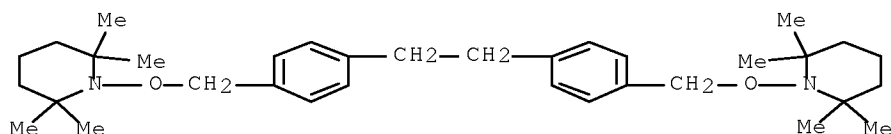
ED Entered STN: 22 May 1997

AB Vinyl aromatic monomers are polymerized in high conversion and low polydispersity using a difunctional nitroxyl initiator R1[-CR2R3-O-NR4R5]2; R1 = linking group; R2, R3 = H, alkyl, cycloalkyl, activating group, or alkyl bridging group; R4, R5 = alkyl, aryl, or C4-10-alkyl ring.

IT 184646-29-5P 184646-30-8P  
 (free radical polymerization initiators for vinyl aromatic monomers)

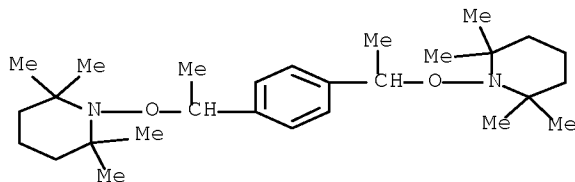
RN 184646-29-5 HCAPLUS

CN Piperidine, 1,1'-[1,2-ethanediylbis(4,1-phenylenemethyleneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



RN 184646-30-8 HCAPLUS

CN Piperidine, 1,1'-[1,4-phenylenebis(ethylideneoxy)]bis[2,2,6,6-tetramethyl- (9CI) (CA INDEX NAME)



IC ICM C08F002-00

ICS C08F220-10; C08F012-08; B01J031-06

INCL 526217000

CC 35-3 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 28, 67

ST nitroxyl catalyst vinyl arom monomer; styrene polymn  
 nitroxyl catalyst; piperidinyloxy styrene polymn



10/519,030

catalyst; radical polymn catalyst vinyl monomer

IT Polymerization catalysts  
(radical, nitroxyl free radicals; free radical polymerization  
initiators for vinyl aromatic monomers)

IT 154554-67-3P 184646-29-5P 184646-30-8P  
(free radical polymerization initiators for vinyl aromatic  
monomers)

IT 95-78-3 105-05-5 1633-22-3 2564-83-2  
(free radical polymerization initiators for vinyl aromatic  
monomers)

IT 9003-53-6P 121523-76-0P  
(free radical polymerization initiators for vinyl aromatic  
monomers)

L69 ANSWER 28 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1997:224604 HCAPLUS Full-text

DOCUMENT NUMBER: 126:225616

TITLE: Block copolymer preparation using normal/living  
tandem polymerization

AUTHOR(S): Li, I. Q.; Howell, B. A.

CORPORATE SOURCE: Cent. Appli. Polym. Sci., Central Michigan Univ.,  
nmut Pleasant, MI, 48859, USA

SOURCE: Polymer Preprints (American Chemical Society,  
Division of Polymer Chemistry) (1997), 38(1),  
762-763  
CODEN: ACPPAY; ISSN: 0032-3934

PUBLISHER: American Chemical Society, Division of Polymer  
Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 07 Apr 1997

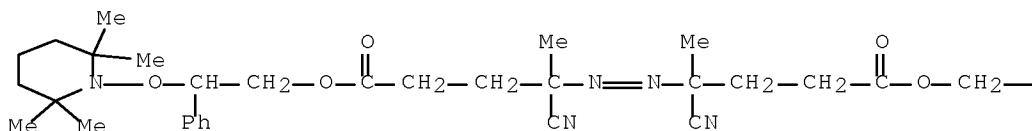
AB Normal/living sequential polymerization of Bu acrylate and styrene yields  
translucent films having microphase separated morphol., indicative of block  
copolymers with incompatible segments. The tandem polymerization approach is  
based on normal and nitroxyl-mediated living radical polymerization In  
contrast, poly(Bu acrylate) (pBA)- polystyrene prepared by polymerizing  
styrene in the presence of pBA yielded a brittle and opaque film having a  
morphol. of pBA droplets dispersed in polystyrene and no sign of microphase  
separation

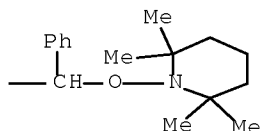
IT 188119-33-7P  
(radical initiator; preparation and morphol. of Bu  
acrylate-styrene block copolymer by normal/living tandem polymerization)

RN 188119-33-7 HCAPLUS

CN Pentanoic acid, 4,4'-azobis[4-cyano-, bis[2-phenyl-2-[(2,2,6,6-  
tetramethyl-1-piperidinyl)oxy]ethyl] ester (9CI) (CA INDEX NAME)

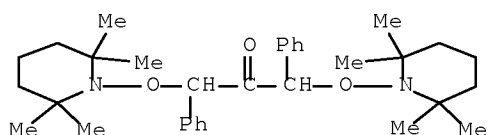
PAGE 1-A





CC 35-4 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 36  
 IT 188119-33-7P  
 (radical initiator; preparation and morphol. of Bu  
 acrylate-styrene block copolymer by normal/living tandem polymerization)

L69 ANSWER 29 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1996:436560 HCAPLUS Full-text  
 DOCUMENT NUMBER: 125:115236  
 TITLE: Photochemical synthesis of TEMPO-capped  
 initiators for "living" free radical  
 polymerization  
 AUTHOR(S): Connolly, Terrence J.; Baldovi, M. V.; Mohtat, N.;  
 Scaiano, J. C.  
 CORPORATE SOURCE: Dep. Chemistry, Univ. Ottawa, Ottawa, ON, K1N 6N5,  
 Can.  
 SOURCE: Tetrahedron Letters (1996), 37(28), 4919-4922  
 CODEN: TELEAY; ISSN: 0040-4039  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 ED Entered STN: 24 Jul 1996  
 AB Two photochem. routes to stoichiometric initiators used in living free-radical  
 polymns. are presented. These routes offer the advantages of higher yields  
 and allow for the preparation of initiators not accessible using current  
 methodol. All initiators gave detectable carbon centered radicals (laser  
 flash photolysis) and promoted the polymerization of styrene.  
 IT 179417-97-1F  
 (catalyst; photochem. synthesis of Tempo-capped  
 initiators for living free-radical polymerization)  
 RN 179417-97-1 HCAPLUS  
 CN 2-Propanone, 1,3-diphenyl-1,3-bis[(2,2,6,6-tetramethyl-1-  
 piperidinyloxy)]- (CA INDEX NAME)



CC 35-3 (Chemistry of Synthetic High Polymers)  
 ST Tempo capped radical polymn catalyst; piperidinyloxy deriv  
 radical polymn catalyst; styrene radical polymn  
 catalyst  
 IT Polymerization catalysts

(living, radical, photochem. synthesis of Tempo-capped free-radical initiators for)

IT 179417-96-0P  
(catalyst; photochem. synthesis of TEMPO-capped initiators for living free-radical polymerization)

IT 92952-55-1P  
(catalyst; photochem. synthesis of Tempo-capped initiators for living free-radical polymerization)

IT 102261-92-7P 154554-67-3P 157462-14-1P 178625-99-5P  
179417-95-9P 179417-97-1P  
(catalyst; photochem. synthesis of Tempo-capped initiators for living free-radical polymerization)

IT 9003-53-6P, Polystyrene  
(preparation of; photochem. synthesis of Tempo-capped free-radical initiators for)

IT 70-11-1, Phenacyl bromide 110-05-4, tert-Butyl peroxide 781-35-1, 1,1-Diphenylacetone 958-79-2, 1,3-Dibromo-1,3-diphenyl-2-propanone 2564-83-2, TEMPO 2632-13-5, 4-Methoxyphenacyl bromide  
(reactant; in photochem. synthesis of Tempo-capped initiators for living free-radical polymerization)

L69 ANSWER 30 OF 30 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1995:734286 HCAPLUS Full-text

DOCUMENT NUMBER: 123:144710

TITLE: Architectural control in "living" free radical polymerizations: preparation of star and graft polymers

AUTHOR(S): Hawker, Craig J.

CORPORATE SOURCE: Almaden Res. Cent., IBM Res. Cent., San Jose, CA, 95120-6099, USA

SOURCE: Angewandte Chemie, International Edition in English (1995), 34(13/14), 1456-9  
CODEN: ACIEAY; ISSN: 0570-0833

PUBLISHER: VCH

DOCUMENT TYPE: Journal

LANGUAGE: English

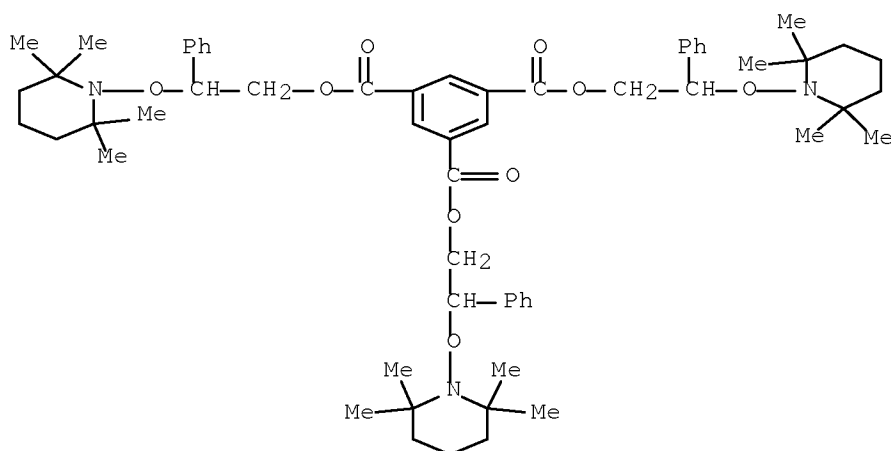
ED Entered STN: 12 Aug 1995

AB Living free radical polymns. based on TEMPO [2,2,6,6-tetramethylpiperidinyloxy] derivs. allow for accurate control of macromol. architecture. Star and graft copolymers can be prepared from the appropriate multi-functional initiators with no crosslinking or termination by combination, even under melt conditions. The mol. weight of the arms, or grafts, can be controlled by varying the equivalent of monomer added while maintaining very low polydispersity. The 2,2,6,6-tetramethylpiperidinyloxybenzoate precursor underwent hydrolysis of the benzyl ester group to give the alc. Reaction of the alc. with 1,3,5-benzenetricarbonyl chloride in the presence of 4-dimethylaminopyridine produced the tri-functional initiator. Bulk polymerization of deuterated styrene with the tri-functional initiator produced the polystyrene in 84% yield. The polystyrene underwent hydrolysis with KOH and the hydrolyzed product has a mol. weight of 7600, which agrees closely with the theor. value for one arm of the star polymer [mol. weight 7000]. An analogous polymerization scheme was also developed to prepare graft systems.

IT 166983-62-6P  
(tri-functional initiator; architectural control in living free radical polymns. with TEMPO derivative functional initiators for star and graft polymers)

RN 166983-62-6 HCAPLUS

CN 1,3,5-Benzenetricarboxylic acid, tris[2-phenyl-2-[(2,2,6,6-tetramethyl-1-piperidinyl)oxy]ethyl] ester (9CI) (CA INDEX NAME)



- CC 35-3 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 36
- ST tetramethylpiperidinyloxy deriv functional initiator star  
polymer; graft polystyrene TEMPO initiator
- IT Polymerization catalysts  
(TEMPO-derivative initiators; architectural control in living  
free radical polymns. with TEMPO derivative functional  
initiators for star and graft polymers)
- IT Polymerization  
(graft, living free-radical; architectural control in living free  
radical polymns. with TEMPO derivative functional initiators  
for star and graft polymers)
- IT Polymerization  
(radical, living free-radical; architectural control in living free  
radical polymns. with TEMPO derivative functional initiators  
for star and graft polymers)
- IT Polymers, preparation  
(star-branched, architectural control in living free radical  
polymns. with TEMPO derivative functional initiators for star  
and graft polymers)
- IT 1310-58-3, Potassium hydroxide, reactions 1592-20-7,  
p-Chloro-methylstyrene 4422-95-1, 1,3,5-Benzenetricarbonyl chloride  
81913-53-3  
(architectural control in living free radical polymns. with TEMPO  
derivative functional initiators for star and graft polymers)
- IT 161776-41-6P  
(architectural control in living free radical polymns. with TEMPO  
derivative functional initiators for star and graft polymers)
- IT 9003-53-6DP, Polystyrene, TEMPO-derivative terminated  
(architectural control in living free radical polymns. with TEMPO  
derivative functional initiators for star and graft polymers)
- IT 166983-64-8P  
(functional copolymer and macroinitiator for preparation of branched  
polystyrene; architectural control in living free radical polymns.  
with TEMPO derivative functional initiators for star and  
graft polymers)
- IT 166983-63-7P  
(functional graft monomer; architectural control in living free

10/519,030

radical polymns. with TEMPO derivative functional initiators  
for star and graft polymers)

IT 9003-53-6P, Polystyrene

(star- and comb-branched; architectural control in living free  
radical polymns. with TEMPO derivative functional initiators  
for star and graft polymers)

IT 166983-62-6P

(tri-functional initiator; architectural control in  
living free radical polymns. with TEMPO derivative functional  
initiators for star and graft polymers)

=> d his nofile

(FILE 'HOME' ENTERED AT 11:41:57 ON 24 MAR 2008)

FILE 'HCAPLUS' ENTERED AT 11:42:08 ON 24 MAR 2008

L1           1 SEA ABB=ON   PLU=ON   US20050215691/PN  
              SEL RN

FILE 'REGISTRY' ENTERED AT 11:42:25 ON 24 MAR 2008

L2           57 SEA ABB=ON   PLU=ON   (100-44-7/BI OR 109-01-3/BI OR  
              109-54-6/BI OR 109-55-7/BI OR 121-44-8/BI OR 12172-85-9/BI  
              OR 12173-47-6/BI OR 12174-06-0/BI OR 12244-16-5/BI OR  
              12417-86-6/BI OR 1318-00-9/BI OR 1318-74-7/BI OR 1318-93-0/  
              BI OR 1319-41-1/BI OR 1592-20-7/BI OR 17639-93-9/BI OR  
              188526-94-5/BI OR 20769-85-1/BI OR 2226-96-2/BI OR  
              264279-93-8/BI OR 319458-08-7/BI OR 478697-26-6/BI OR  
              565450-32-0/BI OR 61745-37-7/BI OR 61746-17-6/BI OR  
              627-18-9/BI OR 639809-48-6/BI OR 639809-49-7/BI OR  
              639809-50-0/BI OR 639809-51-1/BI OR 639809-52-2/BI OR  
              639809-53-3/BI OR 639809-54-4/BI OR 639809-55-5/BI OR  
              639809-56-6/BI OR 639809-57-7/BI OR 639809-58-8/BI OR  
              639809-59-9/BI OR 639809-60-2/BI OR 639809-61-3/BI OR  
              639809-62-4/BI OR 639809-63-5/BI OR 639809-64-6/BI OR  
              639809-65-7/BI OR 639809-66-8/BI OR 639809-67-9/BI OR  
              639809-68-0/BI OR 639809-69-1/BI OR 639809-70-4/BI OR  
              639809-71-5/BI OR 639809-72-6/BI OR 639809-73-7/BI OR  
              74-88-4/BI OR 74-96-4/BI OR 9003-49-0/BI OR 9003-53-6/BI  
              OR 998-40-3/BI)

L3           STR  
L4           50 SEA SSS SAM L3  
L5           STR L3  
L6           6 SEA SSS SAM L5  
L7           STR L3  
L8           50 SEA SSS SAM L7  
L9           STR L7  
L10          50 SEA SSS SAM L9  
L11          7221 SEA SSS FUL L9  
L12          24 SEA ABB=ON   PLU=ON   L11 AND L2  
              SAV L12 KOL030/A  
L13          30 SEA SUB=L11 SSS SAM L5  
L14          694 SEA SUB=L11 SSS FUL L5  
              SAV L14 KOL030A/A  
L15          STR L9  
L16          50 SEA SUB=L11 SSS SAM L15  
L17          STR L15  
L18          12 SEA SUB=L11 SSS SAM L17  
L19          240 SEA SUB=L11 SSS FUL L17  
              SAV L19 KOL030B/A  
L20          6290 SEA ABB=ON   PLU=ON   L11 NOT (L14 OR L19)  
L21          STR L9  
L22          50 SEA SUB=L11 SSS SAM L21  
L23          2091 SEA SUB=L11 SSS FUL L21  
              SAV L23 KOL030C/A

FILE 'HCAPLUS' ENTERED AT 12:55:27 ON 24 MAR 2008

L24          262 SEA ABB=ON   PLU=ON   L14  
L25          144 SEA ABB=ON   PLU=ON   L19  
L26          789 SEA ABB=ON   PLU=ON   L23

10/519,030

L27 6 SEA ABB=ON PLU=ON L12  
L28 1 SEA ABB=ON PLU=ON L27 AND L1  
L29 209 SEA ABB=ON PLU=ON L24(L)PREP/RL  
L30 1 SEA ABB=ON PLU=ON L29 AND CLAY?  
L31 1 SEA ABB=ON PLU=ON L24 AND L25 AND L26  
L32 74 SEA ABB=ON PLU=ON L29 AND (PLASTIC? OR POLYMER?)/SC, SX  
L33 60 SEA ABB=ON PLU=ON L32 AND (INITIAT? OR CATALYST? OR  
ACTIVAT?)  
L34 58 SEA ABB=ON PLU=ON L33 NOT L19

FILE 'REGISTRY' ENTERED AT 13:23:12 ON 24 MAR 2008

L35 STR L5  
L36 10 SEA SUB=L14 SSS SAM L35  
L37 198 SEA SUB=L14 SSS FUL L35  
SAV L37 KOL030D/A

FILE 'HCAPLUS' ENTERED AT 13:24:31 ON 24 MAR 2008

L38 96 SEA ABB=ON PLU=ON L37  
L39 40 SEA ABB=ON PLU=ON L34 AND L38  
L40 32 SEA ABB=ON PLU=ON L26 AND L25

FILE 'REGISTRY' ENTERED AT 13:26:02 ON 24 MAR 2008

L41 STR L21  
L42 STR L21  
L43 50 SEA SUB=L23 SSS SAM L42  
L44 1677 SEA SUB=L23 SSS FUL L42  
SAV L44 KOL030E/A

FILE 'HCAPLUS' ENTERED AT 13:32:30 ON 24 MAR 2008

L45 614 SEA ABB=ON PLU=ON L44  
L46 399 SEA ABB=ON PLU=ON L45(L)PREP/RL  
L47 271 SEA ABB=ON PLU=ON L46 AND (PLASTIC? OR POLYMER?)/SC, SX  
L48 208 SEA ABB=ON PLU=ON L47 AND (INITIAT? OR CATALYST? OR  
ACTIVAT?)  
L49 1 SEA ABB=ON PLU=ON L48 AND L1  
L50 2 SEA ABB=ON PLU=ON L48 AND CLAY?  
L51 4 SEA ABB=ON PLU=ON L48 AND POF/RL  
L52 174 SEA ABB=ON PLU=ON L48 AND CAT/RL  
L53 6 SEA ABB=ON PLU=ON L52 AND MOA/RL  
L54 15 SEA ABB=ON PLU=ON L52 AND (PEP OR PYP)/RL  
L55 22 SEA ABB=ON PLU=ON (L49 OR L50 OR L51) OR (L53 OR L54)  
L56 13 SEA ABB=ON PLU=ON L25 AND L46  
L57 35 SEA ABB=ON PLU=ON L55 OR L56  
L58 6 SEA ABB=ON PLU=ON L39 AND ALKOXYAMINE INITIATOR?  
L59 40 SEA ABB=ON PLU=ON L39 OR L58  
L60 5 SEA ABB=ON PLU=ON L57 AND ALKOXYAMINE INITIATOR?  
L61 35 SEA ABB=ON PLU=ON L57 OR L60  
L62 26 SEA ABB=ON PLU=ON L45 AND ALKOXYAMINE INITIATOR?  
L63 26 SEA ABB=ON PLU=ON L62 AND (PLASTIC? OR POLYMER?)/SC, SX  
L64 56 SEA ABB=ON PLU=ON L61 OR L63  
L65 6 SEA ABB=ON PLU=ON L38 AND ALKOXYAMINE INITIATOR?  
L66 40 SEA ABB=ON PLU=ON L59 OR L65  
L67 10 SEA ABB=ON PLU=ON L64 AND L66  
L68 46 SEA ABB=ON PLU=ON L64 NOT L67  
L69 30 SEA ABB=ON PLU=ON L66 NOT